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6 SHARING THE ROAD: POLICY IMPLICATIONS OF

7 ELECTRIC AND CONVENTIONAL VEHICLES IN THE

8 YEARS AHEAD

9 TUESDAY, MAY 8, 2018

10 House of Representatives

11 Subcommittee on Environment

12 Committee on Energy and Commerce

13 Washington, D.C.

14

15

16

17 The subcommittee met, pursuant to call, at 10:15 a.m.,
18 in Room 2322 Rayburn House Office Building, Hon. John Shimkus
19 [chairman of the subcommittee] presiding.

20 Members present: Representatives Shimkus, Barton,
21 Blackburn, Olson, Johnson, Hudson, Walberg, Carter, Duncan,
22 Tonko, Ruiz, Green, McNerney, Cardenas, Dingell, Matsui, and

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23 Pallone (ex officio).

24 Staff present: Samantha Bopp, Staff Assistant; Daniel
25 Butler, Staff Assistant; Kelly Collins, Staff Assistant;
26 Jerry Couri, Chief Environmental Advisor; Margaret Tucker
27 Fogarty, Staff Assistant; Jordan Haverly, Policy Coordinator,
28 Environment; Ben Lieberman, Senior Counsel, Energy; Milly
29 Lothian, Press Assistant and Digital Coordinator; Mary
30 Martin, Deputy Chief Counsel, Energy & Environment; Drew
31 McDowell, Executive Assistant; Brandon Mooney, Deputy Chief
32 Energy Advisor; Austin Stonebraker, Press Assistant;
33 Priscilla Barbour, Minority Energy Fellow; Jeff Carroll,
34 Minority Staff Director; Jean Fruci, Minority Energy and
35 Environment Policy Advisor; Tiffany Guarascio, Minority
36 Deputy Staff Director and Chief Health Advisor; Caitlin
37 Haberman, Minority Professional Staff Member; Rick Kessler,
38 Minority Senior Advisor and Staff Director, Energy and
39 Environment; and Alexander Ratner, Minority Policy Analyst.

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40 Mr. Shimkus. We will call the hearing to order and I
41 will recognize myself 5 minutes for an opening statement.

42 As most of you know, this is the Environmental
43 Subcommittee's third hearing over the last 2 months dealing
44 with fuels and vehicles. Our first hearing provided an
45 overview of the future of personal transportation and I
46 believe there were two key takeaways, one that the internal
47 combustion engine running on petroleum and plant-based liquid
48 fuels remain the major player in the decades ahead. And two
49 that battery electric vehicles will continue to make inroads
50 in the marketplace.

51 Our next hearing expanded on that first point
52 specifically that since the internal combustion engine and
53 liquid fuels are going to be around for awhile we should
54 consider new ideas for improving them, namely, a high octane
55 fuel standard matched with vehicles whose engines are
56 optimized to run on these fuels. Ideally, a range of higher
57 octane fuel blends could lead to as much if not more ethanol
58 use than under the RFS while giving vehicles significantly
59 improved performance and fuel economy.

60 Today we focus on the second point, the battery electric
61 vehicles, EVs, are gaining in market share and that the

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62 internal combustion engine has significant competition for
63 the first time in a long time. This hearing will delve into
64 the question of what these changes mean for everyone involved
65 in fuels and vehicles and most importantly what they mean for
66 consumers. I thank our diverse panel for being here today
67 and providing a variety of perspectives.

68 I should add that we are focusing on EVs and not other
69 alternative vehicles like natural gas vehicles or fuel cells
70 for example, mainly because projections from the Energy
71 Information Administration see EVs as the fastest growing
72 alternative. Of course, only time will tell which vehicle
73 types will catch on.

74 When we think of larger EV fleets, one of the first
75 questions that come to mind is where all the extra
76 electricity is going to come from to power them. After all,
77 EVs are not going to be a good deal for consumers if the
78 electricity is expensive. I am certain we will hear from
79 several witnesses on this point, but I would like to add that
80 I believe coal-fired generation will have an important role
81 in providing affordable electricity and making an EV future
82 work.

83 Fueling infrastructure is also an issue. We currently

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84 have 150,000 liquid fuel retailers along our nation's roads
85 and highways and you can fill up in about 5 minutes. It is
86 hard for EVs to compete with that level of convenience, so
87 charging infrastructure and charging times are still a
88 challenge. As the nation's vehicle mix changes, we may need
89 to re-think past fuel and vehicle policies. For example, the
90 Renewable Fuel Standard was last amended back in 2007 when we
91 assumed that gasoline demand was on a one-way trip higher.
92 We know now that those assumptions were overstated and will
93 be even more so if EVs continue to gain market share. This
94 doesn't necessarily mean the RFS needs to be amended in light
95 of EVs, but Congress should at least look at the matter.

96 Automobiles are the second biggest family expense after
97 home so the stakes are high. I look forward to a thorough
98 discussion and again I thank our witnesses.

99 I have some time. Would anyone else -- I will yield to
100 the gentlelady from Tennessee.

101 [The prepared statement of Mr. Shimkus follows:]
102
103

*****INSERT 1*****

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104 [The prepared statement of Mr. Walden follows:]

105

106 *****INSERT 2*****

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107 Mrs. Blackburn. Thank you, Mr. Chairman, and thank you
108 to the witnesses for being here and for this hearing. In my
109 district in Tennessee we have Nissan which is located right
110 in Franklin, we have GM at the Spring Hill facility working
111 on the Ecotec engine, and we hear from automakers and auto
112 dealers about EVs. We are interested in looking at going
113 forward the strength of that battery, and the chairman has
114 well laid out some of the questions that we as a committee
115 have.

116 We also are looking at the acceptance by the public.
117 Last year in my district, in 2016, 67 percent of the cars
118 that were sold were in the truck category. They were small
119 trucks, light trucks, SUVs, crossovers. And looking at
120 acceptance and then looking at how the EVs will move into
121 that market that is where I will center my questions with you
122 today. I look forward to hearing what you all have to say
123 about this. And as always with us in Tennessee this is an
124 interesting topic and we welcome you. I yield back.

125 Mr. Shimkus. The gentlelady yields back to me. Anyone
126 else seeking the last 30 seconds, if not, I yield back my
127 time and I recognize the ranking member, my friend Mr. Tonko,
128 for 5 minutes.

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129 Mr. Tonko. Thank you, Mr. Chairman. Before we start
130 the clock, if I might I want to acknowledge the presence of
131 Albany County Executive Dan McCoy who just joined us. It is
132 great to have you in town, Dan, and thank you for your work
133 on transportation issues.

134 Thank you, Mr. Chair. And thank you to our witnesses
135 for joining us this morning. Much like this subcommittee's
136 future of transportation fuels and vehicles hearing in March,
137 the assembled panel represents a good overview with diverse
138 perspectives on today's issue, the current state and future
139 of electric vehicles. In recent years, despite more options
140 for fuels and improvements in fuel economy, transportation
141 has become the leading source of greenhouse gas emissions in
142 the United States.

143 Greenhouse gas reductions are occurring much more
144 quickly in the power sector. It has become clear that
145 shifting transportation emissions into electricity generation
146 is not only an effective, but a necessary means for our
147 country to make major strides to address climate change. EVs
148 will continue to become cleaner as the nation's electricity
149 supply moves towards a more low and more zero emissions
150 energy resources. This has already been recognized by

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151 countries around the world, so it is my belief that electric
152 vehicles are not only essential they are inevitable.

153 But we do not need to look as far as China or Europe to
154 see the desire to promote EVs. Cities and towns across our
155 country are launching smart community projects, many
156 including EV charging sites to make their communities more
157 connected and efficient. I expect we will hear about the
158 benefits of EVs, chief among them the opportunities to
159 improve air quality, reduce gas emissions, and save consumers
160 from fuel costs.

161 Despite these benefits, it is important to acknowledge
162 that the internal combustion engine is not going to disappear
163 overnight. In the subcommittee's previous hearing we heard
164 estimates of how long it might take for the nation's vehicle
165 fleet to turn over. Even with a growing adoption rate of
166 EVs, conventional vehicles will remain a staple of our
167 vehicle fleet for decades to come.

168 Today we should hear about a few aspects of the future
169 of electric vehicles. First, what is the state of EV
170 technology development? In part due to investments by the
171 Department of Energy in recent years, batteries' costs have
172 declined and their effectiveness have improved dramatically.

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173 According to DOE's 2016 Revolution Now report, the cost of EV
174 batteries produced at high volume decreased by 73 percent
175 between 2009 and 2016. Automakers are now offering many more
176 vehicle options with ever-increasing ranges at a variety of
177 price points. Continued federal investments in R&D could
178 unlock the next big breakthrough in fast-charging battery
179 capabilities or vehicle-to-grid smart technologies.

180 Second, what barriers still exist to broader EV
181 adoption? These may include increasing consumer education
182 and acceptance, deploying new charging infrastructure, and
183 addressing regulatory hurdles. Regulatory action often lags
184 behind technology. This has been true of charging
185 infrastructure which is outstanding questions about where to
186 build it, who can own it, and how to ensure broad public
187 access at affordable rates. Some of these questions will be
188 determined by state governments and PUCs such as the
189 development of off-peak charging rate structures. But
190 clearly there are things Congress can do to incentivize EV
191 purchases and infrastructure build-out.

192 Finally, where are we heading? The trends are positive
193 for greater EV adoption. I want to highlight a portion of
194 Ms. McKernan's testimony, and I apologize for spoiling it,

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195 but what A-A-A, AAA, has identified is worth mentioning more
196 than once. Between 2017 and '18 there were pretty
197 significant shifts in an increasing number of Americans that
198 want to buy electric for their next vehicle and a decreasing
199 number of Americans concerned about access to charging
200 locations which is still the biggest concern for buyers. It
201 is clear that even in a short amount of time, consumer
202 acceptance is growing and range anxiety is beginning to
203 decline. My guess based on the trends is that concerns over
204 range, charge time, and price will continue to decline
205 especially as more infrastructure is built to support the
206 growing EV fleet.

207 Perhaps the most important trend which is outside of
208 Congress's control is that many other countries have already
209 set ambitious EV goals. Some are even proposing to ban
210 internal combustion engines entirely in the decades ahead.
211 EVs will be heavily utilized around the world which is why I
212 believe this transition is inevitable. It is my hope that
213 our federal R&D investment continue to support the research,
214 design, and manufacture of EVs here in the U.S. in the face
215 of increasing global competition and market opportunities.

216 Mr. Chair, I believe that cleaning up our transportation

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217 sector is important regardless of our vehicle and fuel mixes.
218 That means improving fuel economy, developing new low
219 emissions liquid fuels such as advanced cellulosic biofuels,
220 and deploying a much greater number of electric vehicles. If
221 we continue to identify and address barriers, I am certain EV
222 adoption will increase substantially.

223 So I look forward to hearing more about the current
224 state of EVs as well as what federal, state, and local
225 policymakers can do to continue to incentivize adoption to
226 ensure that the trend of greater EV deployment continues.
227 With that I thank you, Mr. Chair, and I yield back.

228 Mr. Shimkus. The gentleman yields back his time and the
229 chair thanks the gentleman. The chair now recognizes the
230 ranking -- let me delay for a minute -- the ranking member of
231 the full committee, Congressman Pallone from New Jersey, for
232 5 minutes.

233 Mr. Pallone. Thank you, Mr. Chairman. I am pleased
234 that we are finally having a hearing to discuss electric
235 vehicles or EVs. These vehicles are transforming our
236 transportation sector to the benefit of both consumers and
237 our environment, and I strongly support efforts to advance
238 electric vehicles whether they be tax credits for EV

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239 purchases, assistance for the deployment of EV charging
240 infrastructure, and federal investment in vehicle and battery
241 research.

242 Unfortunately though, progress in transportation
243 modernization and fuel economy is under direct attack by the
244 Trump administration. Recent reports indicate that the
245 administration plans to undermine the 2012 agreement made
246 between the auto industry, the State of California,
247 advocates, and the Obama administration to increase the
248 efficiency of our transportation fleet.

249 And this is extremely shortsighted and now comes word
250 that President Trump intends to preempt California, a move
251 that appears driven mainly by Administrator Pruitt and right-
252 wing ideologues to benefit their favorite special interest,
253 the petroleum industry. At the same time, the administration
254 is indiscriminately giving companies of all sizes waivers of
255 the Renewable Fuel Standard undermining that program as well.

256 So the administration's efforts to gut enhanced fuel
257 economy standards couldn't come at a worse time. Emissions
258 in the transportation sector are continuing to grow. They
259 now exceed those of the electricity sector. In 2017, the
260 cost of weather related disasters hit a record \$306 billion,

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261 and just last month we hit another grim milestone.
262 Scientists recorded concentrations of heat-trapping carbon
263 pollution in the atmosphere above 410 parts per million for
264 an entire month. The last time carbon dioxide concentrations
265 were at that level was 3 million years ago when seas were 66
266 feet higher and human beings did not exist.

267 So we can't continue down this road. To avoid further
268 catastrophic climate impacts we must use every tool available
269 to reduce greenhouse gases. EVs are one of our most critical
270 tools to do this. In the face of a drastically changing
271 climate we can't afford to move backwards on vehicle
272 electrification. I believe the future for electric vehicles
273 is promising and their lower operating and maintenance costs
274 offer significant benefits to American consumers.

275 As technologies improve and costs continue to climb,
276 consumers will continue to demand cars that save money and
277 help preserve a livable planet for future generations. EVs
278 have been sharing the road for some time now with
279 conventional vehicles. As with any transformative
280 technology, there are still various to widespread EV
281 adoption, some of those are technological, other barriers are
282 created by shortsighted entities who have a financial stake

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283 in the status quo and little stomach to push forward the
284 electric platform that most auto companies' CEOs admit is
285 critical for the future of their industry.

286 And the growth of the EV market even in the face of
287 scant advertising and limited availability is a testament to
288 American innovation and consumers' desire for these vehicles.
289 Continued investment in EVs and charging infrastructure can
290 only yield positive benefits for our environment, the
291 transportation industry, and the American people. So we need
292 smarter energy infrastructure and cleaner vehicles. Many
293 cities across the country are taking the lead, and it is time
294 that we do that at the federal level to support these
295 efforts. I would like to yield the remainder of my time to
296 Congresswoman Dingell.

297 Mrs. Dingell. Thank you, Ranking Member Pallone. We
298 have all been paying attention to the discussion about fuel
299 economy standards and it is clear that electric vehicles are
300 an important part of getting there. The fact of the matter
301 is auto companies are building EVs, but we need to figure out
302 how we are going to encourage more consumers to buy them and
303 that is a challenge we all have to tackle together. We need
304 to use this hearing to understand the barriers to EV adoption

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305 and deployment, how we combat range anxiety, and we build out
306 an infrastructure that we need to support electric vehicles.

307 This closely relates to fuel economy standards and I
308 will talk about this more on my questioning, but want to
309 close with a final comment. We must maintain one national
310 program for fuel economy standards that keeps California at
311 the table. We need stringent standards that improve over
312 time but that also reflect current marketplace realities like
313 the low cost of gas and low rate of EV adoption.

314 We are entering a critical phase. We can either come
315 together on a negotiated solution that continues upward
316 progress and sets standards through 2030, or we can have a
317 costly legal battle where nobody will win and we cede
318 American leadership in this area to overseas. I hope that
319 this administration, California, and other stakeholders will
320 roll up their sleeves and get to work on a negotiated deal on
321 fuel economy. Failure is simply not an option, it hurts too
322 many people. I yield back the balance of my time.

323 Mr. Shimkus. And the gentleman yields back his time.

324 The chair wants to thank you all for joining us today.
325 It is a diverse and a very interesting panel. And so we will
326 start, first of all, and remember your full statements have

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327 been submitted for the record, you will have 5 minutes to
328 kind of summarize that and we will go into a question and
329 answer period.

330 So we will begin with Megan McKernan, Manager,
331 Automotive Engineering, Automobile Club of Southern
332 California, on behalf of AAA. Welcome, you are recognized
333 for 5 minutes.

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334 STATEMENTS OF MEGAN MCKERNAN, MANAGER, AUTOMOTIVE
335 ENGINEERING, AUTOMOBILE CLUB OF SOUTHERN CALIFORNIA, ON
336 BEHALF OF AAA; MITCH BAINWOL, PRESIDENT AND CEO, ALLIANCE OF
337 AUTOMOBILE MANUFACTURERS; GENEVIEVE CULLEN, PRESIDENT,
338 ELECTRIC DRIVE TRANSPORTATION ASSOCIATION; BOB DINNEEN,
339 PRESIDENT AND CEO, RENEWABLE FUELS ASSOCIATION; GEISHA
340 WILLIAMS, PRESIDENT AND CEO, PACIFIC GAS AND ELECTRIC
341 COMPANY, ON BEHALF OF THE EDISON ELECTRIC INSTITUTE; FRANK
342 MACCHIAROLA, GROUP DIRECTOR, DOWNSTREAM AND INDUSTRY
343 OPERATIONS, AMERICAN PETROLEUM INSTITUTE; DAVID REICHMUTH,
344 SENIOR ENGINEER, CLEAN VEHICLES PROGRAM, UNION OF CONCERNED
345 SCIENTISTS; AND, DYLAN REMLEY, SENIOR VICE PRESIDENT, GLOBAL
346 PARTNERS LP, ON BEHALF OF THE NATIONAL ASSOCIATION OF
347 CONVENIENCE STORES AND SOCIETY OF INDEPENDENT GASOLINE
348 MARKETERS OF AMERICA.

349

350 STATEMENT OF MEGAN MCKERNAN

351 Ms. McKernan. Chairman Shimkus, Ranking Member Tonko,
352 and members of the subcommittee, thank you for the
353 opportunity to testify at today's hearing. My name is Megan
354 McKernan and I am the manager of Automotive Engineering for
355 the Automobile Club of Southern California. In that role I

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356 lead the team of automotive engineers responsible for
357 evaluating alternative fuel vehicles for our annual Green Car
358 Guide. I am also a race car driver, so I am one of those
359 lucky people that gets to apply my passion for cars with my
360 job.

361 With over 100 years of experience, AAA is a trusted,
362 independent authority in the automotive industry. AAA
363 experts serve on SAE committees responsible for setting
364 automotive standards and participate in the Auto-ISAC working
365 group responsible for vehicle cybersecurity guidelines. Most
366 importantly, AAA serves 58 million members and is a leading
367 traffic safety advocate. In the time I have today I would
368 like to focus on a few key points from the more detailed
369 testimony submitted for the record.

370 AAA has invested significant resources into
371 understanding and evaluating vehicle ownership trends, fuels,
372 automated vehicle technologies and electric vehicles, and
373 surveying consumer trends. One of the key investments we
374 have made in this area is the Automobile Club of Southern
375 California's Automotive Research Center, ARC, located in Los
376 Angeles, a premier vehicle emission test laboratory featuring
377 state-of-the-art facilities and equipment operated by a team

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378 of highly qualified engineers and technicians.

379 The pace of battery EVs and plug-in hybrid vehicles
380 being introduced into the national fleet is likely to
381 accelerate especially as technology trends ramp up due to
382 changing consumer preferences, lower ownership costs, and the
383 adoption of connected and autonomous vehicles. In fact,
384 according to a new AAA survey, 20 percent or 50 million
385 Americans are likely to go electric for their next vehicle
386 purchase, a jump of five percentage points from just a year
387 ago.

388 Since 2010, the AAA Green Car Guide has become a trusted
389 source of information for buyers who are looking to maximize
390 the value of their purchase. A team of ARC engineers with
391 more than 75 years of combined automotive experience conduct
392 the evaluations of a variety of new alternative vehicles
393 including hybrid or plug-in hybrid, battery electric,
394 compressed natural gas, hydrogen, other alternative fuel
395 vehicles, or have category leading fuel economy set by the
396 U.S. EPA for the annual AAA Green Car Guide.

397 All vehicles are evaluated in thirteen different
398 categories in real-world and test track evaluations using
399 testing procedures developed by SAE standards and custom

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400 procedures employed by the ARC to provide useful information
401 to members and consumers. Vehicles are rated on the criteria
402 that matter most to car buyers including ride quality,
403 safety, and performance. In 2018, we evaluated 74 vehicles
404 and based on our findings awarded AAA's Top Green Vehicle
405 awards in several categories. The complete guide has also
406 been submitted for the official record and is available
407 online for consumers.

408 To better understand what the public thinks about EVs,
409 AAA also conducted a consumer attitude survey on EV
410 purchasing trends. So what did we find? Two in ten
411 Americans say they are likely to buy an electric vehicle the
412 next time they are in the market for a new or used vehicle,
413 an increase from 15 percent over 2017 survey results. We
414 also learned concern for the environment is the top reason
415 consumers are likely to purchase an EV, followed closely by
416 lower long-term ownership costs, access to the newest
417 technologies, and then access to car pool lanes.

418 And range anxiety, previously a serious concern for
419 consumers, is beginning to ease. More charging options is
420 reducing consumer anxiety and making EVs an attractive
421 vehicle purchase and viable transportation option for a

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422 variety of trips, including longer journeys that may require
423 fueling options as convenient as filling up at the local gas
424 station. With more consumers looking to purchase an EV, the
425 AAA Green Car Guide is a valuable resource for consumers who
426 are looking for the right electric vehicle or alternative
427 fuel vehicle for their next purchase.

428 Over the coming years, automakers will make EVs a higher
429 priority in their research and development efforts and the
430 next generation of EVs will feature the most advanced
431 technology our nation's roads have ever seen. Whether it is
432 EV or autonomous vehicle, the importance of well-maintained
433 roads and bridges cannot be ignored. Infrastructure
434 improvements and system upgrades will need to incorporate
435 electric vehicle charging, intelligent transportation, and
436 connected vehicle technologies to ensure networks are built
437 and maintained to support all levels of connectivity that
438 will benefit users and improve safety.

439 In closing, AAA is committed to doing its part to
440 provide accurate information to help consumers on all things
441 automotive. Through our continued vehicle research and
442 consumer surveys to our work in traffic safety, we will look
443 for opportunities to make the nation's roads, vehicles, and

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444 drivers safer. Thank you.

445 [The prepared statement of Ms. McKernan follows:]

446

447 *****INSERT 3*****

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448 Mr. Shimkus. Thank you.

449 Now I would like to recognize Mr. Mitch Bainwol,
450 President and CEO of the Alliance of Automobile
451 Manufacturers. Sir, you are recognized for 5 minutes.

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452 STATEMENT OF MITCH BAINWOL

453

454 Mr. Bainwol. Thank you, Chairman Shimkus and Ranking
455 Member Tonko, members of the committee. I am Mitch Bainwol.
456 I run the Auto Alliance which is comprised of 12
457 manufacturers headquartered in the U.S., in Europe, and in
458 Japan, and we are responsible for about 80 percent of the
459 vehicles on the road today in this country. Next slide.

460 [Slides.]

461 Mr. Bainwol. Rather than read testimony, I am going to
462 run through a short PowerPoint deck and hopefully it will be
463 a little lively and at least some good images here for you.

464 The first slide shows world vehicle sales 1996, 2006,
465 and 2016 by region, and what you see is one phenomenal growth
466 in sales. So mobility is alive and well and we are probably,
467 2017, closer to a hundred million units. When you think
468 about the next decade a billion cars will be put on the roads
469 of the world. What you also see is that the U.S. is a very
470 mature market. We are relatively stable in terms of sales.
471 And you see China ramping up, so China is clearly the world
472 leader in terms of unit sales. The question for us really,
473 ultimately, is who will be the world leader when it comes to

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474 innovation and we want that to happen here. Next slide.

475 We are talking today about powertrain. I think when you
476 reflect on the broader question of mobility there are four
477 different trends going on. One is powertrain, another is
478 connectivity, another is the trend toward autonomy which this
479 committee has addressed, thankfully, and the last is sharing,
480 and these are all independent trends but they are
481 interactive. And when you have a conversation about
482 powertrain I think you have to look in the context of the
483 broader question. Next slide.

484 Around the world, and this was, I think, suggested in
485 Mr. Tonko's statement, we are seeing policy made to either
486 phase out liquid fuel, ban liquid fuel, or set EV targets.
487 So this is happening in a very, very dramatic way. We are
488 global companies and we are having to respond to that global
489 reality when it comes to policy. That is also happening in
490 the U.S., more so in California and what are called ZEV
491 states, states that follow the California model. But we are
492 seeing policy induce electrification, and the question really
493 is how you align what is happening in the marketplace with
494 what is happening with policy. Next slide.

495 What you see here, very quickly, is a timeline of

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496 announcements by the companies responding to the global
497 interest in electrification. Next slide.

498 You see the green bars show from 2011 through 2017 the
499 number of models available to the public when they go into
500 showrooms to buy a car and it has gone up by about 980
501 percent from 2011 to 2017. So we are offering many more
502 models but consumers literally are not buying it just yet.
503 EVs represent about 1.2 percent of the marketplace. If you
504 add in hybrids you are getting closer to about 3 percent.
505 The next slide tells you why this is in part happening and
506 one reason is the success of the conventional engine. From
507 2005 to 2017, the conventional engine is up 30 percent in
508 terms of fuel economy and so that does make the question in
509 terms of the economic calculus a more complicated one for the
510 consumer. Next slide.

511 Here you see the relationship between gas prices and the
512 adoption, the purchase of alternative powertrains and it
513 looks like an Olympic event. It looks like synchronized
514 swimming. It is just directly correlated, and so
515 policymakers can make policy but what happens in the
516 marketplace has a huge impact in terms of buying behavior.

517 The next slide shows the bottom line in terms of where

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518 we are and the red line is the share of the marketplace that
519 is gas and diesel. The blue line is the share of the
520 marketplace that is a combined hybrid, plug-in, and electric
521 and the circled percentages are the delta between gas,
522 diesel, and alternative powertrains. And from 2011 to 2017
523 that net has gone from 96 percent to 95 percent, so in other
524 words it hasn't really moved. We all expect it is going to
525 change at some point, but it has not yet changed.

526 I have two more slides. This next one is a bit
527 complicated, but it reflects -- I can deconstruct it pretty
528 quickly and easily. It reflects, and I believe you may have
529 a copy of this and we will make sure it is available to you,
530 this reflects the ZEV percentages in 2013 and in 2017 by the
531 states on the Energy and Commerce Committee. So, overall,
532 ZEVs were 0.6 of the marketplace in 2013, in 2017 nearly
533 doubled to 1.13. If you look at California, there you see a
534 material change.

535 So, for the California members, up from 2.34 to 4.81,
536 California is alone in this respect. Other states are not
537 moving quite as rapidly. It is also important to point out
538 Georgia, where the ZEV credit, the tax credit, was removed
539 and there the number actually fell. So there is a direct

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540 relationship between the availability of tax credits and
541 adoption.

542 Finally, the last slide, I just want to make a point
543 that the job of Congress is hard and sometimes policies
544 conflict. If you care about the environment and that is your
545 driving passion in CO2 reduction then you are looking to
546 promote electrification and that all makes sense, but that
547 obviously drains the Trust Fund. If you are looking to build
548 an infrastructure then you want a robust gas fund and that
549 unfortunately is inhibited by electrification and by the
550 improvements in conventional engines.

551 At any rate, I appreciate the opportunity to testify and
552 this is a kind of sardine panel, but I would look forward to
553 the questions.

554 [The prepared statement of Mr. Bainwol follows:]

555

556 *****INSERT 4*****

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557 Mr. Shimkus. Thank you very much.

558 The chair now recognizes Genevieve Cullen, President,
559 Electric Drive Transportation Association. You are
560 recognized for 5 minutes. Thanks for being here.

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561 STATEMENT OF GENEVIEVE CULLEN

562

563 Ms. Cullen. Thank you. Good morning Chairman Shimkus,
564 Ranking Member Tonko, and members of the committee. I am
565 Genevieve Cullen, president of the Electric Drive
566 Transportation Association. Our membership includes the
567 entire electric drive value chain including vehicle, battery,
568 and component manufacturers as well as utilities and
569 infrastructure developers who are advancing e-mobility.
570 Using electricity to power a hybrid, plug-in hybrid, battery
571 and fuel cell electric vehicles enhances our energy security
572 with fuel diversity and ensures our competitiveness in the
573 global race for new technology while reducing transportation
574 costs and emissions.

575 A brief look at the numbers, the same numbers that Mitch
576 uses but from a slightly different lens shows a growing
577 market for electric drive, since the commercial scale
578 introduction of plug-in vehicles in late 2010 the electric
579 drive segment has grown from two to almost fifty models
580 including three models of fuel cell vehicles. More than
581 800,000 electric vehicles have been sold to date and annual
582 sales are continuously increasing. 2017 sales showed a 71

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583 percent increase over 2015 in the face of stable and low gas
584 prices.

585 The diversity of the electric drive market is also
586 increasing. We are seeing a expanded offerings across a
587 range of price points in vehicle categories including trucks,
588 buses, and mobile equipment. Looking ahead, a survey of
589 major industry and analyst projections shows uptake
590 increasing substantially in the next decade and beyond. For
591 instance, the Boston Consulting Group predicts that EVs could
592 be more than 20 percent of the U.S. new car registrations by
593 2030. Bloomberg New Energy Finance estimates that global
594 electric drive sales will reach parity with internal
595 combustion sales by 2038.

596 While the numbers and timelines have some variability,
597 the direction of the market is clear. Electrification will
598 shape the future of mobility. The global opportunity in e-
599 mobility has not gone unnoticed by our competitors. Although
600 not alone in its pursuit, China is making an aggressive push
601 to dominate this market and they could succeed. The Wall
602 Street Journal recently reported that 40 percent of global
603 investment in electric vehicles is occurring in China.
604 Meanwhile, electric charging and hydrogen fueling

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605 infrastructure are expanding to serve this market. DOE
606 reports more than 20,000 charging stations in operation
607 today. More will be needed to serve diverse driving and
608 charging needs.

609 Electric transportation advances are also reinforcing
610 growth in automation, connectivity, and shared mobility.
611 While the continuum of autonomous technology is being built
612 into vehicles today is not exclusive to it, electric drive is
613 in many ways the optimal partner. The smart technologies of
614 the future will be built on electrified platforms. In that
615 vein, we thank the committee for its leadership in this area
616 through H.R. 3388, the SELF DRIVE Act. The advances we have
617 been talking about have positive implications for consumers,
618 businesses, and the country.

619 For drivers, e-mobility means wider options and reduced
620 costs. For the country, the growth of this market is
621 building an advanced technology value chain that is creating
622 jobs, expanding manufacturing in the United States, and
623 bolstering our position in the global race for
624 electrification. An electrified transportation sector will
625 also increase our energy security, reducing our reliance on a
626 single transportation fuel while reducing transportation

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627 emissions.

628 So where do we go next? To secure these benefits and
629 the U.S. position in the global marketplace we need to grow.
630 I think we can all agree to that. We are still an emerging
631 market of new technologies pushing to deliver ever-enhanced
632 performance at reduced cost while building volume. To
633 achieve that scale, the industry is investing in technology
634 development, market expansion, and infrastructure at the
635 local, regional, and national scale. Public policies can
636 reinforce that work and speed achievement of these benefits.

637 In conclusion, industry investment trends, technology
638 advances, and global market imperatives all point to
639 electrification. Accelerating that movement is a critical
640 opportunity for continued United States leadership in a
641 market that we build. Neglecting that opportunity is a
642 choice to follow rather than lead in the world market for
643 electric transportation. Again I thank you for the
644 opportunity to be here today and I look forward to your
645 questions.

646 [The prepared statement of Ms. Cullen follows:]

647

648 *****INSERT 5*****

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649 Mr. Shimkus. Thank you very much. The chair now
650 recognizes Bob Dinneen, President and CEO of the Renewable
651 Fuels Association. Welcome, you are recognized for 5
652 minutes.

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653 STATEMENT OF BOB DINNEEN

654

655 Mr. Dinneen. Good morning Chairman Shimkus, Ranking
656 Member Tonko, and members of the subcommittee. I greatly
657 appreciate the opportunity to be with you again to present
658 the views of the American fuel ethanol industry.

659 Liquid fuels and internal combustion engines will
660 continue to drive America for decades to come and despite
661 what you might hear, these are not fully mature technologies.
662 Plenty of room remains for the improved performance of both.
663 We need to make sure that the technologies literally and
664 figuratively driving our economy compete in a policy
665 environment that maximizes efficiency and carbon reduction
666 and allows fair access to a market that has largely been
667 closed to competition for more than a century.

668 As you heard at your hearing 2 weeks ago, ethanol is the
669 lowest cost and cleanest source of octane on the planet and
670 research has shown that a mid-level ethanol blend could
671 deliver tremendous efficiency benefits if used in an
672 optimized engine. However, if the move toward higher octane
673 fuels simply encourages more hydrocarbon aromatics, a huge
674 opportunity will be lost and consumers will be paying more

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675 for fuels that pollute more, are imported more, and increase
676 carbon more.

677 This committee has already led when it comes to
678 transformative energy policy. The RFS, for example, remains
679 a beacon of success that is being emulated as other countries
680 seek to expand their production and use of renewable fuels to
681 address the same energy, economic, and environmental
682 imperatives that drove this committee to pass the RFS a
683 decade ago.

684 Yes, there are critics of the policy, those who want to
685 ignore the economic and environmental consequences of
686 unfettered petroleum use, but consumers appreciate the
687 savings at the pump resulting from the increased use of lower
688 priced biofuels. Farmers appreciate an important value-added
689 market that means fewer taxpayer dollars being spent on farm
690 programs, environmentalists recognize that we have made an
691 important first step in addressing global climate change, and
692 national security hawks most certainly value the fact we are
693 relying more on renewable fuels produced in the Midwest and
694 less on fossil energy from the Middle East.

695 That is why EPA Administrator Pruitt's campaign to
696 destroy RFS demand is being met with such virulent

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697 opposition. By issuing secret hardship waivers to highly
698 profitable refineries, by ignoring a court-ordered
699 reallocation of 500 million gallons in 2016 RFS obligations,
700 and by forgiving more than half of the RFS obligation for an
701 aging and noncompetitive refinery that has scapegoated the
702 RFS, EPA has done great damage to this important program.
703 Those actions send the wrong signals to the fuel producers
704 and automakers who are poised to make huge investments in the
705 next generation of fuels and vehicles.

706 The ethanol industry recognizes a broad array of
707 electric vehicle technologies are on the horizon and we want
708 them to succeed. We do not see electric vehicles as a
709 threat, rather, we see electric vehicles as fellow travelers
710 on our road toward energy independence and decarbonization.
711 It will take all innovative technologies for us to succeed.
712 Indeed, I will tell you, although I would appreciate it if
713 you didn't tell my board of directors that my wife drives a
714 hybrid electric car. She loves it, I don't. It is too small
715 for me, big surprise. I much prefer my flex-fuel Chevy
716 pickup, but that just underscores my point.

717 There will be consumers for whom electric vehicles work
718 well for their taste, their lifestyle, and their wallets and

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719 there will be consumers who will continue to prefer liquid
720 transportation fuels. Public policy needs to make room for
721 both and ought not put the heavy finger of government on the
722 scale in favor of any one technology. Today, for example,
723 EVs are effectively treated as zero emission vehicles because
724 the upstream source of the electricity is not considered.
725 That is not only inaccurate it provides EVs with an incentive
726 relative to other decarbonization technologies. Compliance
727 values from all technologies should be based on full, direct,
728 well-to-wheels lifecycle emissions that would allow for an
729 apples-to-apples treatment of their greenhouse gas emissions.

730 We believe ethanol and EVs can play a complementary role
731 in the long term. In 2016, Nissan unveiled the prototype of
732 a vehicle powered by solid oxide fuel cells that uses ethanol
733 as the fuel. Last month, Toyota revealed its first prototype
734 of a hybrid electric vehicle powered by a flexible fuel
735 internal combustion engine that can run on any blend of
736 ethanol and gasoline. Ford has also experimented with
737 ethanol flex-fuel hybrid EV technology.

738 A global policy shift is taking place driving
739 transportation toward low carbon technologies. Renewable
740 fuels have a key role to play in the development of this new

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741 mobility. We believe a combination of technologies with
742 ethanol could be the answer so long as there is a level
743 playing field. Together we can work to increase efficiencies
744 and reduce costs for consumers, it is not one or the other.
745 Thank you and I look forward to our questions.

746 [The prepared statement of Bob Dinneen follows:]

747

748 *****INSERT 6*****

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749 Mr. Shimkus. Thank you.

750 The chair now recognizes Geisha Williams, President and
751 CEO of Pacific Gas and Electric Company, on behalf of the
752 Edison Electric Institute. You are recognized for 5 minutes.
753 Welcome.

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754 STATEMENT OF GEISHA WILLIAMS

755

756 Ms. Williams. Thank you, Chairman Shimkus. Thank you,
757 Ranking Member Tonko, for the opportunity to speak before
758 your committee this morning. It is on, yes. I will make it
759 up a little bit closer, all right.

760 I am Geisha Williams, CEO and President of PG&E
761 Corporation, the parent company of Pacific Gas and Electric.
762 Pacific Gas and Electric is the largest combined electric and
763 natural gas energy company in California. PG&E is here today
764 as a member of the Edison Electric Institute. Together,
765 EEI's member companies provide power to 220 million Americans
766 across all 50 states.

767 We are also active and committed partners in the drive
768 to grow America's electric transportation sector. As such,
769 we applaud your focus on the policy implications of a
770 transportation future in which electric vehicles will
771 represent a growing share of the vehicles on our roads. Let
772 me say clearly, we see electric transportation as a vital
773 opportunity. It is an opportunity to make more efficient and
774 economic use of our nation's incredible energy grid
775 infrastructure and to help keep costs reasonable and

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776 affordable to all Americans. But it is also an opportunity
777 for the U.S. to cement itself as a leader in transportation
778 innovation. It is an opportunity to spur new investment and
779 create jobs. And it is an opportunity to make our
780 environment more sustainable through improved air quality and
781 through lower greenhouse gas emissions.

782 Electric transportation technology and infrastructure
783 are going to be one of the keys to making our cities smarter
784 and more liveable. In our home state in California, for
785 example, the transportation sector contributes 40 percent of
786 the greenhouse gas emissions, 80 percent of NOx emissions and
787 90 percent of diesel particulate matter pollution. Because
788 of the progress we are seeing in clean energy, and
789 specifically in California, electrifying the transportation
790 sector offers a chance to dramatically reduce each of these
791 numbers. Consider in 2016, the electric industry CO2
792 emissions were nearly 25 percent below the 2005 levels and
793 for the first time in over 40 years they were lower than
794 emissions from the transportation sector.

795 EEI member companies including PG&E are already helping
796 to turn these opportunities into a reality in an efficient
797 and cost effective way that benefits everyone. And let me

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798 briefly touch on a few examples. One is access to public
799 charging infrastructure. A study by EEI and the Institute
800 for Electric Innovation projects that by 2025 there will be
801 seven million electric vehicles on the road in the United
802 States and they will require nearly five million charging
803 stations. More than a dozen EEI companies are stepping up
804 and helping with this challenge with plans to invest \$350
805 million in customer programs and projects.

806 PG&E alone, my company, is investing \$130 million over
807 the next 3 years to put 7,500 chargers at workplaces, at
808 multifamily residences, and in disadvantaged communities.
809 This will roughly double the number of public charging
810 facilities in our service area. And we hope to soon launch
811 an additional \$230 million project of similar investments for
812 medium and heavy duty vehicles. We are also growing EV into
813 the grid. One key to this is managing the timing of
814 charging. Our companies are approaching this in multiple
815 ways including customer education, rate design, and smart
816 charging which optimizes charging through communication
817 between the grid, the vehicle, and the charging equipment.

818 For the last several years, PG&E has partnered with BMW
819 to successfully pilot wireless smart charging through vehicle

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820 telematics systems. We also offer special rates to EV owners
821 that incentivize them to charge at certain times of the day
822 which allows us to take advantage of times when there is
823 excess energy available on the grid. For the customer it
824 means they are able to charge their vehicles at the
825 equivalent of a \$1.20 per gallon, a price we haven't seen at
826 the pump in 20 years.

827 The last area I will touch on is the industry's work to
828 accelerate EV adoption by fleet operators including our own
829 companies. EEI companies have increased the number of EVs in
830 their fleets by 43 percent just since 2015. We are helping
831 others make this transition as well. At PG&E, for example,
832 we are working with transit agencies in Stockton and San Jose
833 to pilot advanced smart charging and energy storage
834 technologies to more seamlessly integrate their electric bus
835 fleet charging with our grid.

836 These few examples only scratch the surface of
837 everything we are doing as an industry. The key point I want
838 to leave you with is this. Our industry is a critical
839 partner in America's transportation future. From a policy
840 standpoint it is vital that we continue to look for
841 opportunities to engage the power sector and leverage this

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842 amazing energy grid that we have in this effort. Our
843 companies are unique in our scale, our reach, and our
844 expertise and we are committed to partnering and making this
845 opportunity in this area a reality for all. Thank you again
846 for the opportunity.

847 [The prepared statement of Ms. Williams follows:]

848

849 *****INSERT 7*****

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850 Mr. Shimkus. Thank you very much.

851 The chair now recognizes Mr. Frank Macchiarola, Group
852 Director, Downstream and Industry Operations for the America
853 Petroleum Institute. Welcome.

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854 STATEMENT OF FRANK MACCHIAROLA

855

856 Mr. Macchiarola. Good morning. Chairman Shimkus,
857 Ranking Member Tonko, and members of the subcommittee. Thank
858 you for the opportunity to testify today. My name is Frank
859 Macchiarola and I am group director of Downstream and
860 Industry Operations at the American Petroleum Institute.

861 The subject of this hearing is important as it raises
862 policy questions affecting our nation's economic strength,
863 energy security, and environmental stewardship while
864 presenting core questions about our everyday mobility. The
865 internal combustion engine is the backbone of our
866 transportation system and instituting significant changes to
867 that system presents complex issues that must be approached
868 with substantial caution.

869 The fuel supply chain is highly integrated with the
870 transportation sector therefore we encourage the development
871 and evaluation of transportation policy through a holistic
872 systems-based approach in which vehicles, fuels, and
873 infrastructure are treated as an integrated system. A strong
874 oil and gas industry is a vital component of this integrated
875 system and it is essential for our standard of living. The

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876 oil and gas industry supports approximately 10.3 million
877 American jobs and nearly 8 percent of the U.S. economy. The
878 industry also provides more than 98 percent of the fuels we
879 use to conduct commerce, to travel for work and vacation, and
880 to stay connected to our family and friends.

881 America's energy renaissance has allowed us to produce
882 significantly more of the energy we use today and to help the
883 United States become an exporter of gasoline and diesel. At
884 the same time, the United States has reduced air pollution by
885 73 percent between 1970 and 2016, even as vehicle miles
886 traveled nearly tripled and the economy grew during that
887 period by 253 percent. EIA estimates that liquid fuels will
888 continue to be the primary transportation source through the
889 next 2 decades. The fuels we use must be reliable and
890 affordable and fully compatible with engines, motor vehicles,
891 and fuel distribution systems and we must enact
892 transportation and energy policy based on free market
893 principles providing consumer choice and greater certainty
894 for market participants.

895 One policy that distorts free market, conflicts with
896 integrated approach, and places a burden on the consumer is
897 the Renewable Fuel Standard. It is an example of the

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898 government placing its finger on the scales to benefit one
899 industry over another. To be clear, API believes we need all
900 sources of commercially viable energy including renewables.
901 However, the statutory requirements of the RFS are unworkable
902 and unattainable. At the time of the RFS passage in 2007,
903 EIA significantly overestimated today's gasoline consumption
904 by 12 percent, substantially underestimating oil and gas
905 resources by 70 percent. Furthermore, EIA assumed in 2007
906 that we would see a technological breakthrough in production
907 of advanced and cellulosic biofuels. These fuels have failed
908 to be produced in meaningful commercial volumes.

909 We need to sunset the outdated RFS and we appreciate the
910 leadership of the chairman and members of this subcommittee
911 in analyzing potential solutions for comprehensive reform.
912 As we look at fuels policies including those addressing
913 electric vehicles the RFS should stand as a cautionary tale
914 to policymakers. Electric vehicles show some promise in
915 certain applications and many forecasters expect market-
916 driven growth in the production and use. While API supports
917 market-driven activity, we oppose government intervention in
918 the markets to pick winners and losers as that creates an
919 unlevel playing field.

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920 In enacting transportation policy we must acknowledge
921 that vehicles are staying on the road longer and going
922 further on the fuels we use. New transportation policies
923 that incentivize shifts in consumer behavior should be
924 considered with caution as they could impose undue costs on
925 consumers with diminishing environmental benefits. The
926 ultimate trajectory and level of market penetration achieved
927 by EVs should not rely on government interference but rather
928 the free market. It should depend on consumer acceptance on
929 the relative energy and environmental performance of existing
930 conventional automotive technologies.

931 The oil and gas industry is committed to providing for
932 our nation's essential energy needs in the years ahead and we
933 look forward to working with the Congress on solutions to
934 support the American consumer. I thank the chairman, ranking
935 members, and members of the subcommittee for the opportunity
936 to testify today and I look forward to your questions. Thank
937 you.

938 [The prepared statement of Mr. Macchiarola follows:]

939

940 *****INSERT 8*****

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941 Mr. Shimkus. Thank you very much.

942 The chair now recognizes Dr. David Reichmuth, Senior
943 Engineer, Clean Vehicles Program with the Union of Concerned
944 Scientists. You are recognized for 5 minutes. Welcome.

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945 STATEMENT OF DAVID REICHMUTH

946

947 Mr. Reichmuth. Thank you. Good morning, Chairman
948 Shimkus and Ranking Member Tonko and members of the
949 committee. My name is Dr. David Reichmuth. I am a senior
950 engineer with the Union of Concerned Scientists, a nonprofit
951 advocacy organization whose primary mission is to ensure that
952 policy is crafted based on the best available science. I
953 would like to thank you for the invitation to talk to you
954 today about the benefits of electric vehicles, or EVs.

955 The promises of EVs are clear. Drivers can save money,
956 harmful emissions are reduced, and the use of petroleum can
957 be minimized. Reducing emissions means public health
958 benefits, economic benefits, and avoiding the worst impacts
959 of climate change. Transportation is now the leading source
960 of carbon dioxide emissions in the United States. Addressing
961 the emissions from this sector is a critical piece in moving
962 towards a more sustainable economy and way of life not just
963 for the United States but worldwide.

964 Now switching fuels from petroleum to electricity can
965 provide significant emissions reductions. My colleagues and
966 I have compared the climate emissions from driving on

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967 electricity versus gasoline. To do so, we considered all the
968 global warming emissions from driving on electricity versus
969 gasoline and we considered all the emissions from fueling
970 power plants, getting electricity to an EV and compared that
971 to the emissions created extracting crude oil, refining
972 gasoline, distribution to filling stations, and combustion in
973 a vehicle's engine.

974 Our most recent analysis shows that cars driving on
975 electricity in the U.S. have emissions equal to what a
976 gasoline car that gets 80 miles per gallon would produce. It
977 is true that emissions from EVs vary depending on where in
978 the U.S. they are driven, as the emissions from electricity
979 generation varies regionally. Overall, 75 percent of the
980 people in the U.S. now live where driving on electricity is
981 cleaner than a 50 mile per gallon gasoline car and these are
982 figures for the average EV. More efficient EVs of course are
983 even cleaner. Not only are EVs cleaner than gasoline cars,
984 the gap is growing as electricity generation shifts away from
985 dirtier fossil fuels to sustainable lower emission resources.

986 EVs also have air quality benefits when paired with
987 clean sources of power. Studies have shown the potential for
988 EVs to reduce ground level ozone and particulate matter in

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989 both urban and rural areas across the country. But EVs are
990 not just cleaner than gasoline vehicles, they are cheaper to
991 refuel and maintain. In a recent UCS analysis we compared
992 the cost to refuel with gasoline with the cost to recharge an
993 EV. Looking at the electricity providers in the 50 biggest
994 U.S. cities, recharging an EV is cheaper than refueling the
995 average new gasoline vehicle in every city. The average
996 saving is almost \$800 per year on fuel costs.

997 In addition to lower fuel costs, EV drivers avoid
998 unexpected shocks to their household budget from spiking
999 gasoline prices and face significantly lower maintenance
1000 costs. Battery electric vehicles have no engine so no oil
1001 changes, spark plugs, or engine air filter to change.
1002 Instead, electric motors and batteries require little to no
1003 attention. This means less time and less money spent on
1004 routine car maintenance.

1005 Now EVs are an important tool to improve public health
1006 and economic vitality, but the EV market, the infrastructure,
1007 and the technology are still relatively new. It has been
1008 less than 8 years since the start of mainstream EVs in the
1009 United States and the ability of longer range, lower cost,
1010 battery electric vehicles really only started last year. So,

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1011 while there is strong growth in EVs both in the number of
1012 models available and sales volume, it is far too early to end
1013 public sector investments in EVs and in needed
1014 infrastructure. Removing support prematurely will delay the
1015 adoption of EVs at a time we need to be doing exactly the
1016 opposite which is accelerating the transition to cleaner
1017 transportation.

1018 Other countries around the world are moving to
1019 incentivize and require electric vehicles and manufacturers
1020 will need to respond in order to compete. Last year, four of
1021 the five top-selling EV models in the U.S. came off of
1022 American assembly lines. Making policy choices in the U.S.
1023 that inhibit the growth of EVs will place domestic car makers
1024 at risk of falling behind, hurt American drivers, and harm
1025 U.S. manufacturing. Now EVs are an important solution to
1026 improve air quality and reduce climate changing emissions.
1027 They allow U.S. drivers to use a cheaper fuel with lower
1028 variability in price. The EV market it is young but it is
1029 growing and the investment that U.S. Government, the states,
1030 automakers, and utilities have made in EVs will pay dividends
1031 if we continue to have smart EV policies.

1032 I would like to thank you for the invitation to share

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1033 UCS's perspective on electric vehicles and I am happy to
1034 speak to those issues or anything else which is of interest
1035 to the committee. Thank you.

1036 [The prepared statement of Mr. Reichmuth follows:]

1037

1038 *****INSERT 9*****

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1039 Mr. Shimkus. Thank you very much.

1040 And finally, last but not least, Mr. Dylan Remley,
1041 Senior Vice President, Global Partners, on behalf of the
1042 National Association of Convenience Stores and Society of
1043 Independent Gasoline Marketers of America. Sir, you are
1044 recognized for 5 minutes. Welcome.

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1045 STATEMENT OF DYLAN REMLEY

1046

1047 Mr. Remley. Chairman Shimkus, Ranking Member Tonko,
1048 members of the subcommittee, thank you for the opportunity to
1049 testify today --

1050 Mr. Shimkus. Just pull that mike just --

1051 Mr. Remley. -- on the future policy implications of
1052 electric and conventional vehicles. My name is Dylan Remley.
1053 I am Senior Vice President of Terminal Operations for Global
1054 Partners. Global has one of the largest terminal networks in
1055 the Northeast and we are also one of the largest independent
1056 owners, suppliers, and operators of gasoline stations in the
1057 Northeast with approximately 1,450 locations, 260 of which we
1058 directly operate. I am testifying today on behalf of the
1059 National Association of Convenience Stores and the Society of
1060 Independent Gasoline Marketers of America.

1061 Members of NACS and SIGMA, collectively, account for
1062 approximately 80 percent of retail motor fuel sales in the
1063 United States. Fuel retailers are consumer-facing entities
1064 that must adapt to changing consumer demands and to do so we
1065 must change the products and services we offer to the general
1066 public. We have chosen our retail locations with care. We

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1067 constantly strive to provide the best possible refueling
1068 services to consumers. For example, Global itself has
1069 recently partnered with Electrify America to install EV
1070 charging stations in some of our stores and we are also
1071 exploring a number of other options with EV providers to meet
1072 the ever-changing needs of our customer base.

1073 However, as more electric vehicles continue to share the
1074 road with conventional vehicles in the years ahead, we urge
1075 policymakers to consider several factors including the
1076 environmental and energy independence implications of this
1077 shift, the impact on marketplace competition, and then the
1078 impact on the nation's infrastructure. Lawmakers must
1079 examine the well-to-wheels cost and impact of EVs from power
1080 plant energy distribution to battery disposal. How will
1081 batteries be ultimately recycled and then disposed if it
1082 cannot be recycled? Moving forward now and figuring out not
1083 only this issue but a host of others at a later date does not
1084 work.

1085 It is also important for lawmakers to consider energy
1086 security and independence questions. Our nation has made
1087 significant strides to achieve energy independence and
1088 security. We should question the implications of a

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1089 transition to a electricity-powered vehicles that will come
1090 at a significant cost in the form of new infrastructure and
1091 will rely on the importation of certain raw materials from
1092 countries that may not be considered politically or
1093 economically stable. However, today what we would most like
1094 to emphasize is that policymakers must consider the current
1095 skewed incentives that exist for EVs that may lead to an
1096 anticompetitive refueling marketplace.

1097 Many states effectively grant utility companies a
1098 monopoly over the provision of electricity in a particular
1099 marketplace and utility companies are guaranteed a rate of
1100 return from their ratepayers. Recently, utility companies
1101 have sought approval to enter the EV recharging business and
1102 treat their capital investments in that business as part of
1103 the utility rate base that all of their customers must pay.
1104 The private sector will have significant difficulty competing
1105 with zero market entry costs. It is inappropriate for
1106 utility companies and states to be regressively funding
1107 electric recharging infrastructure on the backs of
1108 ratepayers, the vast majority of whom do not even drive EVs.

1109 I want to be very clear. Fuel retailers do not have a
1110 problem with a public utility entry in the electric fuel

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1111 recharging business provided it is competing for that
1112 business on equal footing with the private sector. A public
1113 utility company should not be able to invest in electric or
1114 alternative fuel recharging infrastructure by using ratepayer
1115 funds which the private sector simply cannot compete with.

1116 Infrastructure concerns including updating the power
1117 grid and the cost of maintaining the nation's roads and
1118 bridges must also be evaluated. Unlike conventional vehicles
1119 which support infrastructure investments because their owners
1120 pay the gas tax, current EV owners use the country's roads
1121 essentially for free. Lawmakers should ensure the EV
1122 recharging and infrastructure investment is done through the
1123 private sector on a level playing field so that tax and other
1124 incentives are not provided to certain stakeholders to the
1125 omission of others.

1126 Finally, given the prime location of retail fueling
1127 stores, the highly competitive nature of our industry, and a
1128 wealth of experience in refueling, we believe that the fuel
1129 retailing industry is well-positioned to meet consumer needs
1130 as EVs continue to enter the marketplace. We encourage
1131 Congress and the states to work with industry and other
1132 stakeholders to find ways to deploy electric charging

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1133 infrastructure via the existing privately developed motor
1134 fuel marketplace. Thank you for the opportunity to testify
1135 and I am happy to answer any questions.

1136 [The prepared statement of Dylan Remley follows:]

1137

1138 *****INSERT 10*****

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1139 Mr. Shimkus. Thank you very much. What a great panel.
1140 I appreciate all your time. It shows you the challenges that
1141 we have in front of us.

1142 So with that I will recognize myself 5 minutes to start
1143 the round of questioning. And this is really for anyone.
1144 You all have been following what we have been doing. Our
1145 last hearing on April 13th talked about the opportunity of
1146 high octane fuels and vehicles optimized to use them. Do you
1147 see that as a benefit to meeting CAFÉ and environmental
1148 emission issues if we moved to a high octane standard? And
1149 this is open to any of the panelists who may want to answer
1150 that question.

1151 Bob, first?

1152 Mr. Dinneen. Sure. Absolutely, Congressman, as I
1153 mentioned in my testimony, we believe that high octane fuels
1154 with optimized engines represent a tremendous opportunity to
1155 generate efficiency gains and carbon reductions. It is the
1156 way of the future and can be one of those future technologies
1157 that is providing consumer choice and savings at the pump.

1158 Mr. Shimkus. Mitch?

1159 Mr. Bainwol. We would agree that octane offers an
1160 opportunity for fuel efficiency gains and we are agnostic

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1161 about the source of the octane, but ethanol is a low-cost
1162 option.

1163 Mr. Shimkus. Well, Mr. Bainwol, before I go to then --
1164 since you represent -- so in our debate we have talked to, in
1165 essence, our big three, but obviously you represent a broader
1166 spectrum of manufacturers who haven't been in discussions
1167 with us yet. Do you think they would eventually see this as
1168 an opportunity for meeting the CAFÉ and some of the
1169 environmental issues?

1170 Mr. Bainwol. So I think everybody does agree that there
1171 is, most folks agree that there is a value to octane and its
1172 conversation, I think, is taking place and will accelerate.
1173 Just last week a number of our members met with Bob and
1174 others from the ethanol community, so I think it is timely,
1175 ripe, and we are happy to engage.

1176 Mr. Shimkus. Great.

1177 Mr. Macchiarola?

1178 Mr. Macchiarola. Sure. Mr. Chairman, we believe the
1179 idea of a 95 RON technology-neutral national performance
1180 standard is an intriguing one. Certainly it would have to be
1181 coupled in a conversation about broader RFS reform that we
1182 believe must include a sunset of the program, but again we

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1183 also think on the question of 95 RON there are outstanding
1184 questions, questions about timing, the phase-in period of
1185 which it would be phased in, questions about potential costs
1186 at retail, potential mislabeling issues, are all questions
1187 that need to be analyzed and assessed. But again we
1188 appreciate your efforts on comprehensive RFS reform.

1189 Mr. Shimkus. Let me go to Mr. Remley.

1190 Mr. Remley. Chairman, if I can just comment briefly, I
1191 think we would agree with a lot of the comments that the rest
1192 of the witnesses had. You know, it is a promising
1193 opportunity. I think the concern just raised by Mr.
1194 Macchiarola would also be echoed at the retail level which is
1195 labeling. There is still questions from OEMs with regards to
1196 higher ethanol blends, but the concept of the 95 RON and
1197 higher octane is certainly a promising development.

1198 Mr. Shimkus. Great, thanks.

1199 I want to move to my next question so I want to go to
1200 AAA, Ms. McKernan. The price of EVs are still high and the
1201 long charging stations makes it difficult to take long trips.
1202 I am from rural Illinois and I represent 33 counties. Over
1203 the last week I spent almost 6 hours on the road every day I
1204 was home. So can EVs ever work for lower income households

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1205 especially ones that can only afford a single car?

1206 Ms. McKernan. Well, definitely range anxiety is
1207 beginning to ease and the number of charging stations has
1208 increased in the United States, reached a level of 16,000 in
1209 2017. You know, AAA's main concern is giving consumers a
1210 choice. And so we are not advocating one way or another that
1211 people should drive EVs or not, we want to provide the most
1212 information that we can for consumers so they have the
1213 choice.

1214 Mr. Shimkus. So let me cut you off, I am getting short
1215 on time. But I wanted to ask because you mentioned roads and
1216 bridges, so how do we help -- and this is not a Ways and
1217 Means Committee, in fact, my roommate Mr. Brady would be mad
1218 if I asked this question. But how do we then incorporate the
1219 electric vehicles into the funding of our roads and bridges
1220 systems? What is the secret sauce that allows us to help
1221 maintain those in a Highway Trust Fund?

1222 Ms. McKernan. I don't have that specific information.
1223 This particular study didn't cover anything like that. But I
1224 would be happy to have AAA's staff follow up with a response.

1225 Mr. Shimkus. Well, I think that is going to be, it is
1226 an important debate if you talk to folks in the

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1227 Transportation Committee and also the Ways and Means, is why
1228 haven't we done anything on roads and bridges is this Highway
1229 Trust Fund fight. So this is going to be, whether it is now
1230 or the future it is going to be part of the debate.

1231 Let me go back to Bob for my final question. In your
1232 testimony you suggest that environmental benefits of EVs are
1233 overstated while the environmental benefits of biofuels are
1234 not fully accounted for. How would you suggest fixing that?

1235 Mr. Dinneen. Well, I think they need to look at a full
1236 lifecycle analysis for all fuels and technologies. For
1237 ethanol, Congressman, they count the angels on the head of a
1238 pin. They look at the energy it takes to produce the fuel.
1239 They take the energy that is used in the production of the
1240 fertilizer on the farm and the energy it takes to produce the
1241 John Deere hat the farmer wears. Heck, they even count
1242 emissions from overseas from indirect land use. And for
1243 electricity they only are looking at the carbon not the
1244 tailpipe and the source of the electricity is not considered
1245 and that just gives a disparate view.

1246 Mr. Shimkus. Thank you. My time has expired. I am
1247 going to move to the ranking member of the subcommittee, Mr.
1248 Tonko, for 5 minutes.

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1249 Mr. Tonko. Thank you, Mr. Chair.

1250 Ms. McKernan, earlier I mentioned some of the trends
1251 that AAA has identified on potentially changing consumer
1252 attitudes on EVs. Do you have any thoughts on whether there
1253 might be a growing consumer acceptance of EVs?

1254 Ms. McKernan. Yes, there definitely is a growing
1255 consumer acceptance. The more consumers can learn about the
1256 technology, what the capabilities are, and seeing whether or
1257 not it can fit into their lifestyle, I think, is what is
1258 helping to change their attitudes.

1259 Mr. Tonko. Thank you.

1260 And Dr. Reichmuth and Ms. Cullen, some have suggested
1261 that low penetration of EVs is because consumers do not want
1262 them. Is that a fair assessment?

1263 Mr. Reichmuth. If I may, that is not a fair assessment
1264 because, you know, the consumers in the marketplace for a new
1265 car are not seeing the same variety of models that they are
1266 seeing in gasoline vehicles. So there are cars that are not
1267 available in every state, the Fiat 500E is only available in
1268 two states, for example. There is no plug-in pickup truck
1269 yet so if you are in the market for a pickup. There is also
1270 brands that don't offer an EV, so you can't get a Jeep or a

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1271 Lexus plug-in yet. So, when you just look at the penetration
1272 rate, the number, the amount of sales, it doesn't reflect
1273 necessarily the consumer desire to buy an EV if they can't
1274 get that EV on their dealers' lots.

1275 Ms. Cullen. I would also point out that you are talking
1276 about penetration in an extremely large market so while the
1277 percentage might be small in penetration the growth of the
1278 market has been substantial. As I noted, we went from two
1279 vehicles on the market in late 2010 to almost 50 varieties at
1280 different price points today and those offerings are only
1281 increasing. Every major auto manufacturer has announced
1282 plans to diversify their fleets, their price points, the
1283 sizes, to offer the additional segments and performance
1284 profiles that consumers are looking for.

1285 So I think it is also important to note again the market
1286 has grown every year since introduction and that 2017
1287 represents a 71 percent increase in sales over 2015. So this
1288 market is growing, but we are pretty new and we are a small
1289 part of the enormous car park.

1290 Mr. Tonko. And again, Ms. Cullen, one of the biggest
1291 barriers to greater EV adoption has been a lack of charging
1292 infrastructure. You cite a Navigant study that estimates

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1293 sales of fast chargers are expected to increase from 20,000
1294 to over 70,000 annually within a decade. What role will this
1295 deployment of fast charging infrastructure have in further EV
1296 adoption?

1297 Ms. Cullen. The expansion of DC fast charging will
1298 absolutely facilitate expanded use of electric transportation
1299 and it might be worth just taking a second for those people
1300 that don't live and breathe this that so there are levels of
1301 charging. Level 1 is the outlet in your home. Level 2 at
1302 240 volts is what your dryer or your refrigerator would run
1303 after and that reduces the charging time of an EV by half. A
1304 DC fast charger reduces that charging time again to a point
1305 that enables essentially long distance traveling in a pure
1306 battery electric vehicle.

1307 I would also add that the question -- you can also build
1308 range confidence by building in extra battery capacity in the
1309 vehicle. And that is what is happening. We are seeing
1310 longer ranges in battery vehicles and the fact that there are
1311 plug-in hybrids where you have the addition of an internal
1312 combustion engine that can service all your longer distance
1313 needs and perhaps do all of your daily commuting on
1314 electricity.

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1315 Mr. Tonko. Thank you.

1316 And Dr. Reichmuth, a majority of EV charging occurs at
1317 home. Unfortunately, this is not an option for everyone
1318 especially in cities which may have high potential for EV
1319 adoption due to shorter commuting but also have many people
1320 living in apartment buildings, multifamily houses, or in
1321 neighborhoods without dedicated parking spots. So do you
1322 have any suggestions of how to enable this population to
1323 access EV charging infrastructure?

1324 Mr. Reichmuth. Yes. That is an important
1325 consideration. So there is a number of things that are going
1326 on. One is the increase in putting charging into multifamily
1327 dwellings, so apartment buildings, condominiums, and a number
1328 of the utilities are working hard at that right now. We can
1329 also take a look at building codes. Putting at least conduit
1330 and the space for EV charging in parking garages and new
1331 facilities, you don't have to put the wiring, you don't have
1332 to put in the charging equipment itself. You can just put
1333 the conduit so you don't have to rip up concrete or rip up a
1334 parking lot to put in charging later.

1335 And then the last thing is DC fast charging in urban
1336 environments not just for people that don't have a place to

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1337 park at home and to charge at home, but also to enable taxi,
1338 ride sharing, and other uses of electric vehicles in the
1339 urban environment, so having that fast charging within the
1340 urban environment.

1341 Mr. Tonko. Thank you very much. I yield back.

1342 Mr. Shimkus. The gentleman yields back his time. The
1343 chair now recognizes the gentleman from Ohio, Mr. Johnson,
1344 for 5 minutes.

1345 Mr. Johnson. Thank you, Mr. Chairman, and thanks to all
1346 of our panel members for being here this morning. I
1347 appreciate this discussion.

1348 Ms. Williams, the electricity grid is becoming
1349 increasingly complex with electric vehicles being just a part
1350 of that increasing complexity. This presents us both with
1351 opportunities and challenges for the grid. Along those
1352 lines, can you identify any potential cyber threats
1353 associated with increased usage of EVs and what is the
1354 industry doing to tackle these challenges?

1355 Ms. Williams. Thank you very much for that question.
1356 So as you know, the electric utility industry, the energy
1357 companies of America, we take cyber threats extremely
1358 seriously. We work very closely with the government looking

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1359 at standards, looking at our controls, looking at specific
1360 things we need to do to make our grid the safest and the most
1361 cyber secure that it can be. Of course when you look at
1362 electrification overall, more points, electrification whether
1363 they be electric vehicles or other things do in fact present
1364 additional opportunities for a hacker to get in and that is
1365 why we have got to be so vigilant, again working closely with
1366 government to make sure that our system is up to code, that
1367 we have good monitoring in place, early detection, and fast
1368 response.

1369 We view charging networks or chargers very much like an
1370 appliance and as our homes become smarter, as really the grid
1371 becomes smarter we have to increase the level of vigilance
1372 and make sure that it is up to code in everything that we
1373 have in place. There are NERC standards, there are any
1374 number of standards that we comply with to make sure that
1375 they are cyber secure.

1376 Mr. Johnson. Sure. Well, you know, my background is
1377 information technology and I have said it many, many times,
1378 cybersecurity is not a goal that has a finish line because as
1379 soon as you solve one problem there is a dozen more right on
1380 the backside of it. It is just something we are going to

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1381 have to remain vigilant on and I appreciate that.

1382 Mr. Macchiarola, the oil and gas industry has undergone
1383 significant changes due to breakthroughs and technological
1384 advancements. Eastern and Southeastern Ohio, for example,
1385 has benefited greatly from the Utica and Marcellus shale gas
1386 plays and I think the ability to access this cheap oil and
1387 gas took many people by surprise. And I think this example
1388 plainly shows we can't always predict future technological
1389 breakthroughs nor the impact that these breakthroughs will
1390 have on the different sectors of our economy such as the
1391 automobile industry.

1392 So as Congress looks at current and future
1393 transportation policies, how can we be sure that we are not
1394 jeopardizing the private sector's ability to innovate and
1395 bring about new technological advancements?

1396 Mr. Macchiarola. That is a great question, Congressman,
1397 and you know firsthand the experience of the shale gas
1398 revolution and in Ohio and your leadership on LNG exports
1399 helped bring that to markets around the world. From our
1400 perspective, I think the point you make is a strong one about
1401 the fact that tipping the scale, of keeping your finger on
1402 the scale for government through mandates or through

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1403 incentives can have a real dampening effect on, you know,
1404 bringing affordable energy to the consumer, strengthening our
1405 energy security.

1406 The example that I highlighted in my testimony, the
1407 Renewable Fuel Standard, is a perfect case of that. The
1408 estimates that we had both on the demand side and on the
1409 supply side totally missed the mark over the past decade and
1410 the result is we have a mandate that can't be met and needs
1411 to be reformed.

1412 Mr. Johnson. Okay, thank you.

1413 Ms. Williams, back to you, I mentioned that I represent
1414 rural Appalachia. It is not uncommon for my constituents to
1415 have to travel 35, 40 miles up hills, down hills, around
1416 curves to go to work, to go check on Mom and Dad, to go to
1417 the grocery store or the hospital. The terrain is hilly and
1418 dependability is a must in automobiles, with light trucks and
1419 SUVs and pickups largely making up the vehicles of choice.
1420 While I see EVs making inroads in the cities, they face a
1421 different set of challenges in my neck of the woods. Do you
1422 believe that EVs will become viable in rural parts of the
1423 country that have weather and terrain and distance challenges
1424 like that?

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1425 Ms. Williams. I do believe they will become viable in
1426 all parts of our society. Within in our own service area we
1427 have hills and lots of varied terrain. We have a lot of
1428 agricultural parts of our service area in our Central Valley
1429 and our North Valley. Some of these areas also end up being
1430 some of our most disadvantaged.

1431 So one of the things that we are doing as we are doing
1432 these pilots to put in more charging networks is going to
1433 learn a great deal about as you put these charging stations
1434 in different parts of our service area, some of which are
1435 disadvantaged communities, some of which are rural, how does
1436 it impact the adoption of electric vehicles, does it make a
1437 difference? We think it will, but it is going to be an
1438 interesting pilot for us to learn from so that we can take
1439 those learnings and then deploy them. As we have heard from
1440 some of the other folks this morning that are testifying,
1441 battery life is increasing and technology is really evolving
1442 and so what we have today may not be exactly what we have 10
1443 or 20 years from now, so I do believe that it will be viable
1444 across the country.

1445 Mr. Johnson. Okay. Well, thank you, ma'am. And Mr.
1446 Chairman, I yield back.

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1447 Mr. Shimkus. The gentleman yields back his time. The
1448 chair now recognizes the gentleman -- we have a lot of
1449 Californians on this subcommittee -- so he recognizes the
1450 gentleman from California, Mr. McNerney, for 3 minutes -- no
1451 5 minutes.

1452 Mr. McNerney. I thank the chairman and I thank the
1453 panelists, a great set of viewpoints this morning.

1454 Ms. Williams, I appreciate you giving us a shout-out to
1455 Stockton and the work with the RTD out there to electric our
1456 bus systems. What sort of integration challenges do the
1457 electric utilities face and are there grid related benefits
1458 to EV penetration?

1459 Ms. Williams. I do believe there are grid related
1460 benefits. One of the things that we find in California as we
1461 know, Congressman, is we have plentiful solar renewable
1462 resource available to us, often more than we need in the
1463 middle of the day. And I believe that electric vehicles
1464 provide us an opportunity through smart charging, through
1465 incentives to really, our customers to charge at the right
1466 time to take advantage of that plentiful resource that is
1467 there to really better utilize this incredible energy grid
1468 that we have. At the same time we are seeing second use

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1469 batteries being grouped and deployed to become almost like a
1470 battery to grid resource. So in the middle of the night when
1471 we don't have the sunshine, the battery, the second life
1472 batteries provide us needed resources to really smooth out
1473 the resource requirements for our system.

1474 Mr. McNerney. So when you refer to wireless smart
1475 charging you are referring to the communication being
1476 wireless not the charging?

1477 Ms. Williams. Correct, the communication, the
1478 telematics.

1479 Mr. McNerney. Right. Do you have any rebuttal to Mr.
1480 Remley's comments that the utilities are being guaranteed a
1481 rate of return and building EV infrastructure on the backs of
1482 ratepayers?

1483 Ms. Williams. I do. Energy companies like PG&E
1484 Corporation or PG&E are not guaranteed a rate of return.
1485 That is a rate of return that is set and if you operate your
1486 system efficiently and effectively and deploy your capital
1487 and run your business efficiently you could achieve that but
1488 you don't often achieve that necessarily. As far as sort of
1489 the whole approach of the utilities somehow being, expanding
1490 their monopoly, we believe in competition and EEI nor PG&E

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1491 believes that there is one point of view in terms of what
1492 that business model looks like. We look forward to
1493 partnering with third parties in terms of the actual
1494 ownership of the charging network. We view ourselves as an
1495 enabler. We view ourselves as, because of our scale, because
1496 of our capital as spurring this important resource into
1497 happening, but we certainly don't believe that we are the
1498 only game in town. We want to help electric vehicles
1499 actually become more of a reality. Again we see ourselves as
1500 an enabler, not as a monopolistic owner of those charging
1501 networks.

1502 Mr. McNerney. Thank you.

1503 Mr. Reichmuth, how do EVs lifecycle global warming
1504 emissions compare to that of gasoline vehicles?

1505 Mr. Reichmuth. That is an important question. So with
1506 the research that we have done at UCS we found that, in
1507 general, driving on electricity is much cleaner than driving
1508 on gasoline from a global warming perspective. You know, in
1509 our analysis we did an apples-to-apples comparison, looked at
1510 all the emissions from generating electricity and bringing it
1511 to the EV and compared that to getting crude oil out of the
1512 ground, refining it into gasoline, distributing it to service

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1513 stations, and then of course burning it in the car. If you
1514 look at cars today on the road, the EVs on the road they
1515 average emissions equal to an 80 mile per gallon gasoline car
1516 and that is higher in places with cleaner electricity, so
1517 over a hundred miles a gallon equivalent in California.

1518 Mr. McNerney. Thank you.

1519 Mr. Bainwol, have the CAFÉ standards introduced an
1520 explosion of innovation in auto engineering? That is kind of
1521 a leading question, but go ahead and answer it.

1522 Mr. Bainwol. Yes, there has been massive investment in
1523 innovation both on a powertrain side and elsewhere, and
1524 certainly standards certainly bias some of those decisions.

1525 Mr. McNerney. Will the elimination as proposed by Mr.
1526 Pruitt impact that drive to innovation?

1527 Mr. Bainwol. There has not been a final NPRM so we
1528 don't know whether they are going to be eliminated or not. We
1529 are hopeful that this slope continues to rise. We are in
1530 favor of year over year fuel efficiency.

1531 Mr. McNerney. Thank you.

1532 Ms. Cullen, do you know if the electric vehicle industry
1533 working to create appliances -- let me read this as it is
1534 written. I am trying to innovate here. Do you know if the

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1535 electric vehicle industry working to create small motors for
1536 industries such as agriculture is the industry working to
1537 create applications for agriculture?

1538 Ms. Cullen. It absolutely is. There is enormous growth
1539 in mobile equipment in the electric drive field. We are
1540 seeing them in tractors, in forklifts, and you are seeing
1541 applications at ports and other, and airports that the
1542 flexibility of electric drive is that it is very scalable and
1543 so that it can be used in small and light applications as
1544 well as larger and heavy duty ones because we are also seeing
1545 an enormous growth in the medium and heavy duty and the
1546 transit bus segment.

1547 Mr. Shimkus. The gentleman's time is expiring.

1548 Mr. McNerney. Well, I will yield back then.

1549 Mr. Shimkus. The gentleman yields back his time. The
1550 chair now recognizes the Chairman Emeritus of the Energy and
1551 Commerce Committee, Joe Barton, for 5 minutes.

1552 Mr. Barton. Thank you. I am happy to go, but Mr.
1553 Duncan was here before me if you --

1554 Mr. Shimkus. I would like for you to allow Mr. Duncan
1555 to go first.

1556 Mr. Barton. I think Mr. Duncan is fully entitled. He

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1557 showed up at his first baseball practice today and that gives
1558 him real priority.

1559 Mr. Shimkus. The chair recognizes the gentleman from
1560 South Carolina, Mr. Duncan, for 5 minutes.

1561 Mr. Duncan. Thank you.

1562 And Mr. Bainwol, in your testimony you alluded to the
1563 obvious that when gas prices fall the desire to pay more for
1564 a vehicle with higher fuel economy diminishes. The
1565 statements reflect over the ebbs and flows of the demand in
1566 the market. Despite all the incentives to purchase EVs, they
1567 still only represent only 1 percent of all vehicles purchased
1568 last year. Despite the reality of the market, it is clear
1569 that government is trying to push consumers toward purchasing
1570 electric vehicles.

1571 Now I believe that the market determines what people buy
1572 and people buy what suits their needs whether it is safety as
1573 a concern, whether it is size, horsepower, or whatever, and
1574 many people like to drive SUVs. For example, in my district
1575 light trucks, SUVs, pickups, and vans accounted for 63.92
1576 percent of vehicle sales. Electric vehicles only accounted
1577 for 0.05 of the sales in 2016. Now my office did the math
1578 and that equates to literally 13 electric vehicles in my

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1579 district, 13 -- 770,000 people and 11 counties in South
1580 Carolina, in 2016 that equated to 13 vehicles.

1581 It is clear my constituents don't really gravitate
1582 toward these vehicles. I am not going to say they don't like
1583 them. They don't gravitate toward them for a lot of reasons,
1584 probably price point being a big part of that, probably the
1585 need to carry things in a pickup or SUV. So the way I see
1586 it, when consumers are determining what vehicle to purchase
1587 they look to see if it fits their needs. I do recognize that
1588 the price of EVs are decreasing and I understand the Tesla
1589 Model 3 costs about \$35,000. Let me ask you this. If
1590 electric vehicles can be brought down to a price comparable
1591 to that of an average conventional new car, should the
1592 government be providing massive tax credit to purchase them?

1593 Mr. Bainwol?

1594 Mr. Bainwol. So when we get to a point where the costs
1595 have equalized I think that is a good policy question. We
1596 face a reality today where globally and in this country we
1597 have requirements to meet both CAFÉ standards as well as the
1598 ZEV mandate in California and a bunch of other states that
1599 represent probably a third of the country. So we have a
1600 compliance reality where electrification really does help.

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1601 And so the question here is when this inflection point occurs
1602 and that is a function of range and battery cost, and I think
1603 Bloomberg has estimated that by 2025 the price delta will
1604 equalize and at that point certainly with additional range
1605 then you can see the calculus for a consumer evolving.

1606 Mr. Duncan. I agree. So let me ask you this. If we
1607 get rid of the tax credits and incentives do you truly
1608 believe consumer demand is there for electric vehicles?

1609 Mr. Bainwol. I think consumer demand is coming and we
1610 need for it to come. We do have a compliance reality that is
1611 just a matter of law and so we have got to comply and
1612 electrification is definitely a piece of that compliance.
1613 And as the battery costs come down and range improves then
1614 that becomes a viable compliance approach.

1615 Mr. Duncan. I actually like electric vehicles. I like
1616 the thought process of it. I understand horsepower issues.
1617 I mean an electric motor pushes an aircraft carrier. So I
1618 also understand the simplicity. If you blow an electric
1619 motor you unplug it, put another one in, plug it back in, and
1620 the car goes. It is not like an internal combustion engine.
1621 I think the car manufacturers are recognizing the future as
1622 well. I think we are going to see that. The problem I have

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1623 is when government picks winners and losers, when government
1624 is forcing consumers into a certain area like this because of
1625 some political beliefs and philosophical beliefs.

1626 So, Mr. Chairman, I don't have any other questions, but
1627 thanks for holding the hearing. It has been informative. I
1628 yield back.

1629 Mr. Shimkus. The gentleman yields back his time. The
1630 chair recognizes the gentlelady from Michigan, Mrs. Dingell,
1631 for 5 minutes.

1632 Mrs. Dingell. Thank you, Mr. Chairman. I thank you
1633 again to all of the witnesses for being here, a subject I
1634 deeply care about.

1635 I am going to do my first questions to Mr. Bainwol and
1636 to Ms. Cullen. Can you elaborate on how the global shift to
1637 the electrification of mobility is affecting the U.S.
1638 manufacturing base and what kind of opportunity does this
1639 represent for the auto industry and its workers?

1640 Mr. Bainwol. I would just note that first slide I
1641 showed reflected a growth in unit sales from roughly 50
1642 million units in 1996 to something approaching 100 million
1643 units. And as other countries right or wrongly determine
1644 that electrification is going to be a big piece of that for

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1645 us to compete we have got to have an ability to innovate and
1646 to respond to that growing market.

1647 Mrs. Dingell. Ms. Cullen, any comment?

1648 Ms. Cullen. I agree completely what Mitch just said
1649 there and I think as a matter of manufacturing and employment
1650 this global market is an enormous generational opportunity.
1651 The last time DOE looked at employment numbers they were
1652 looking at in 2015, just looking at the electric drive
1653 manufacturing segment they counted some 215,000 jobs. So
1654 that is fully 3 years ago. In that time that segment has
1655 grown as has the entire ecosystem associated with vehicles
1656 and infrastructure. So it is an enormous opportunity for our
1657 employment base and for our global competitiveness.

1658 Mrs. Dingell. As mentioned in your testimony, and to
1659 this committee and the House, the House unanimously passed
1660 legislation that we worked, I worked on, to facilitate the
1661 testing and deployment of autonomous vehicles. Can you both
1662 talk a bit more about the role EV technology plays in
1663 supporting AV's future?

1664 Ms. Cullen. First of all, thank you for your leadership
1665 on that issue. We are, I think everyone in the industry and
1666 everyone who actually uses roads is interested in the future

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1667 of automation and how that changes transportation. I think
1668 what everyone who is looking at automation sees is that
1669 electrification is an optimal partner, because as a
1670 congressman pointed it is a simpler technology so there are
1671 fewer pieces to electrify. It is also more suited to the
1672 connectivity that is essential for automated transportation.

1673 Again and finally, I think because of its drive cycles
1674 EVs are perfect partners for what is seen as the first market
1675 for automated vehicles which is urban shared mobility, sort
1676 of your Lyft vehicle, and that those short drive cycles are
1677 perfect for an urban EV.

1678 Mrs. Dingell. Thank you. I am going to be running out
1679 of time and I have a lot of questions. So let me ask you,
1680 switch to another subject, I want to talk about the important
1681 role that Congress can play to incentivize EV adoption and
1682 deployment. The EV tax credit has played an important role
1683 in this, but should we be looking at tweaking it if necessary
1684 to make it even more effective? We know that today's
1685 electric vehicles cost more than the conventional gasoline
1686 powered cars. Do you believe that the EV tax incentive has
1687 helped consumers afford an EV that they otherwise would not?

1688 Ms. Cullen. Absolutely. The credit has been effective

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1689 and it is working as designed by Congress. It is making a
1690 new technology, which has the standard price premiums
1691 associated with new technologies, more affordable to
1692 consumers which in turn is helping the industry build to
1693 scale and that is the global opportunity we are trying to
1694 capture.

1695 Mrs. Dingell. So I hear from manufacturers that the tax
1696 credit has been critical to EV sales. Do you think that when
1697 some manufacturers hit the cap and they may need to reduce
1698 the price and potentially lose even more money could this
1699 disincentivize EV protection and could this cap potentially
1700 take us backwards? In your opinion, will auto companies
1701 reach production scale at 200,000 units or do we need a
1702 larger more robust EV market so that all manufacturers can
1703 take advantage of this scale?

1704 Ms. Cullen. I think it is important that Congress take
1705 a look and update that credit to reflect where the scale of
1706 the market is now. I think it can, I think there is an
1707 important role for it to play going forward and having as
1708 many diverse entrants into the industry is critical.

1709 Mrs. Dingell. We know that about ten states currently
1710 offer EV incentives. Why isn't this doing enough? Why is it

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1711 so important for the federal government to have a role here
1712 to the EV tax credit and can you even answer why when states
1713 who have these EV mandates said that they were going to put
1714 these vehicles into their fleets they haven't?

1715 Ms. Cullen. I cannot answer that question. I would
1716 leave that to the states. But the federal policy does speak
1717 to the importance of certainty and that is what consumers
1718 want, what manufacturers want, and what industry wants is
1719 they need some certainty to make their decisions and make
1720 their investments.

1721 Mrs. Dingell. I am out of time.

1722 Mr. Shimkus. The gentlelady's time has expired. The
1723 chair now recognizes the gentleman from Texas, Mr. Barton,
1724 for 5 minutes.

1725 Mr. Barton. Well, thank you, Mr. Chairman. And since I
1726 allowed Mr. Duncan to go first since he showed up at baseball
1727 practice this morning, I should commend you, the audience
1728 that know this, but in addition to being such a great
1729 subcommittee chairman you are one of the all-time all-stars
1730 of the Republican baseball team and just announced your
1731 retirement. Your son is graduating, I think, the day of the
1732 game or the next day.

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1733 Mr. Shimkus is the only, I think this is true, the only
1734 current member of either team that has hit an over-the-fence
1735 home run, blue socks -- blue socks, he was my MVP pitcher a
1736 number of years, pitched the year after he had a heart
1737 attack. And you will be missed. In fact you were missed at
1738 the practice today, you not being there for the first time in
1739 20 years. So in addition to being a great subcommittee
1740 chairman, you are just one of the best athletes to ever play
1741 in the baseball game and we will miss you.

1742 Mr. Shimkus. How very kind of you. I was able to work
1743 on my nuclear waste bill though this morning so.

1744 Mr. Barton. I don't know if that is a good tradeoff,
1745 quite frankly. Anyway, we aren't here, we are basically here
1746 to talk about electric vehicles.

1747 I have got, really, just two basic questions and I don't
1748 know who to ask them to, there is so many people at the
1749 witness table. My first question is what is the cost of a
1750 home electric vehicle charge station if there is such a thing
1751 in existence? Who can answer that?

1752 Mr. Remley?

1753 Mr. Remley. The costs vary widely. If you are talking
1754 about a Level 1 charger it can be a few hundred to a few

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1755 thousand dollars and it ranges --

1756 Mr. Barton. I am talking about at somebody's house.

1757 Mr. Remley. That is correct. It is going to be a few
1758 hundred to a few thousand dollars depending on the vehicle
1759 and a host of other factors. And a DCFC fast charger can be
1760 hundreds of thousands of dollars.

1761 Mr. Barton. Hundreds of thousands.

1762 Ms. Cullen. Congressman, may I?

1763 Mr. Barton. Sure.

1764 Ms. Cullen. Actually a Level 1 charger is the outlet in
1765 your house. You don't pay extra for that. You can just plug
1766 in your car. It will take longer to charge but you can do
1767 that for free. A Level 2 charger to install it with any sort
1768 of smart technology so that you could set a timer, you could
1769 spend a few hundred dollars to a couple thousand dollars
1770 depending on how smart you want it to be.

1771 Mr. Barton. But they are available?

1772 Ms. Cullen. They are.

1773 Mr. Barton. Okay. Now what about a commercial charger
1774 at a, I call it a gasoline station. I guess you would call
1775 it an electric station. What would a commercial charger that
1776 you could just drive up and instead of fill up your tank

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1777 charge your battery in some reasonable amount of time?

1778 Ms. Cullen. Right. So at the next level, in commercial
1779 facilities whether they are at coffee shops or at gas
1780 stations or anyplace where there is an electricity line you
1781 can install a commercial charging spot. And most people
1782 would use either a Level 2 if it is a place where people are
1783 going to be sitting for awhile like an airport where you are
1784 going to leave your car while you are on a trip. You could
1785 plug it in and charge it at a slower rate.

1786 If you are, say, at Starbucks and you just have 10
1787 minutes they would be interested in installing a DC fast
1788 charge, which is 480 volts, so that folks who went in to get
1789 a cup of coffee could get several or ten or twelve miles of
1790 charge in 10 minutes. And that costs, depending on how, you
1791 know, the conduit and how complicated it is to lay down the
1792 line, \$50,000 would be --

1793 Mr. Barton. But those both in your home and
1794 commercially there is equipment available today?

1795 Ms. Cullen. Yes, in all price points and capacities.

1796 Mr. Barton. Okay.

1797 Mr. Remley. Congressman, if I may, just our personal
1798 experience we are installing them at our convenience stores.

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1799 A brand-new convenience store having separate chargers
1800 requires a separate, essentially, sub-mini station.

1801 Mr. Barton. It is a what?

1802 Mr. Remley. It is a separate sub-mini station.

1803 Mr. Barton. Sub-mini station.

1804 Mr. Remley. Yes. It requires 500 additional square
1805 feet and the total cost of bringing that in is several
1806 hundred thousand dollars.

1807 Mr. Barton. All right, but not going to be a lot of
1808 several hundred thousand dollar stations installed. This
1809 next question is much trickier. We fund a big chunk of new
1810 highway construction and maintenance through the Highway
1811 Trust Fund which is funded by a cents per gallon federal
1812 highway gasoline tax and in most states have the same thing,
1813 they tack on a state tax. Well, if your electric vehicle,
1814 you can't charge them per gallon so how do you, as we get
1815 more electric vehicles how do we set up a system where they
1816 pay into the Highway Trust Fund? Who wants to tackle that
1817 one?

1818 Ms. Cullen. I will have a go at it.

1819 Mr. Barton. Okay. You are the lady with the answer
1820 today.

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1821 Ms. Cullen. Well, first, pure battery electric vehicles
1822 don't use gasoline but plug-in highway vehicles do and they
1823 do pay a gas tax.

1824 Mr. Barton. Well, focus on all-electric.

1825 Ms. Cullen. So for that segment of the fleet we
1826 absolutely want to be part of a comprehensive solution that
1827 funds the infrastructure, the conventional and the
1828 infrastructure of the future that we need, and there are
1829 states looking at innovative ways to do that. And we
1830 certainly, you know, recognize that the gas tax system as it
1831 is not broken. We didn't break it, but --

1832 Mr. Barton. And nobody has claimed you broke it.

1833 Ms. Cullen. -- the fact is it doesn't serve the
1834 current transportation sector. So I think we need to look at
1835 how everyone contributes and we want to be part of it.

1836 Mr. Barton. Oh, you don't have an answer. Does
1837 everybody who supports electric vehicles at the witness table
1838 agree that electric vehicles in some way should pay
1839 proportionately into the Highway Trust Fund? Is there
1840 anybody that disagrees with that? I think if --

1841 Mr. Bainwol. I would add just not a discordant note,
1842 but a point of complication and that is we have aggressive

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1843 fuel standards in force that we have to comply with. I am
1844 not making a value judgment, I am describing what is. And in
1845 order to comply we need some level of electrification over
1846 the years to come as well as with the California ZEV program,
1847 and to the extent we put impediments in the way of adoption
1848 of electrification that makes that challenge a little bit
1849 deeper. So the point is that these policies can be
1850 contradictory and it is a tough thing to manage and our
1851 particular challenge is we need adoption of electrification
1852 in order to comply and that is just a fact of life and
1853 anything that makes that more challenging is a bit of a
1854 problem.

1855 Mr. Shimkus. The gentleman's time, he was so nice to me
1856 so I gave him a little bit of extra time. So the gentleman's
1857 time has expired. The chair now recognizes the gentlelady
1858 from California, Ms. Matsui, for 5 minutes.

1859 Ms. Matsui. Thank you, Mr. Chairman. First of all, I
1860 would like to start by thanking Geisha Williams from PG&E.
1861 PG&E services part of my district in California and it is
1862 always nice to have a fellow Californian here, although we do
1863 have plenty, I guess, here. We have come -- we have seen the
1864 way that our changing climate has intensified natural

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1865 disasters across the country and recent scientific studies
1866 have even been able to attribute the extent to which climate
1867 change has affected specific extreme events.

1868 Ms. Williams, I know that your utility has felt the
1869 impacts of climate change on your operation. Those impacts
1870 include more intense wildfires and they are difficult for
1871 both rate payers and utilities and I appreciate that the
1872 State of California is taking a look at these issues. I am
1873 also pleased that you are taking tangible climate action that
1874 reduces emissions from the transportation sector to the
1875 benefit of both the utility and the environment. Tell me
1876 more about PG&E's work to facilitate EV deployment, because
1877 in our state it really is somewhat of a mandate.

1878 Ms. Williams. Thank you for that question,
1879 Congresswoman. It is great to see you again. So we
1880 absolutely are facing climate change issues in the state of
1881 California and we certainly believe that the horrible,
1882 devastating wildfires that we had last year are very greatly
1883 attributable to the severe climate that we are seeing. So we
1884 have been on a journey in California for over a decade now in
1885 terms of really looking at emissions and reducing emissions.
1886 My own company has been very successful. Today, 80 percent

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1887 of the power that we deliver to our customers is greenhouse
1888 gas-free and that is a great start. The next big area of
1889 focus for the state of California as we look at how do we
1890 continue to drive emissions down is absolutely the
1891 transportation sector.

1892 Forty percent of the greenhouse gas emissions in the
1893 state of California come from transportation. I mentioned
1894 NOx, I mentioned also particulate matter. There are such
1895 significant air quality issues in the state of California.
1896 Eight of the worst climate air quality, sort of, counties in
1897 the country are in California, so we are all-in on dealing
1898 with the air quality issues, the greenhouse gas issues, and
1899 we truly believe that transportation provides us an
1900 opportunity to go through it.

1901 Ms. Matsui. Could I ask, Ms. Cullen, we talked about
1902 California and the nation about the adoption of the EVs and I
1903 think somebody said one percent across the nation. And you
1904 are saying, I think you said in California it is 3 to 4
1905 percent; is that right? Are you the one who said that?

1906 Ms. Cullen. That was Mitch's number.

1907 Ms. Matsui. Okay, good. I was wondering, what is a
1908 driver of the adoption in California? Is it policy, is it

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1909 really a climate change, what is it? Would you like to
1910 comment on that?

1911 Ms. Cullen. It is a combination of factors. Certainly
1912 policy helps to drive adoption. It also, it is one of the
1913 largest car markets. There is a great deal of consumer
1914 education also in California and I think which is an
1915 important point that has been brought up by a lot of folks on
1916 this panel and a lot of the questioners that educated
1917 consumers are an important part of the deployment mix. And I
1918 think California has provided the important nonfinancial and
1919 financial incentives, the tax policy, as well as HOV lane
1920 access have also helped to speed adoption in the state.

1921 Ms. Matsui. Okay. As you know I have been supportive
1922 of California's authority under the Clean Air Act to set its
1923 own light duty vehicle emission standards. And I am
1924 obviously concerned by the administration's effort to weaken
1925 the current national standards and the result will be more
1926 uncertainty, which is really bad for the consumers and the
1927 automakers and the environment, and last week the State of
1928 California and 17 other states sued the Trump EPA for its
1929 decision to revise the light duty vehicle standards.

1930 I will go back to Ms. Williams. I understand that PG&E

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1931 is supportive of the existing standards. Can you explain why
1932 you are supportive and how these standards affect your
1933 utility, broadly speaking?

1934 Ms. Williams. Well, as I mentioned earlier, we truly
1935 believe that we have unique air quality issues in the state
1936 of California with eight of the ten worst air quality
1937 counties in the country, so we truly believe that it is a
1938 public health issue. We also believe that as we look at
1939 climate change, as we look at what we need to do to continue
1940 to reduce emissions transportation is key to that. And we
1941 believe that electric transportation in particular is going
1942 to provide us a great means of reducing the GHG in the air
1943 and improve the air quality and that is why we are supportive
1944 of the California waiver.

1945 Ms. Matsui. Okay, thank you.

1946 And I don't want to leave you out, Mr. Bainwol. The
1947 automakers are really very important in this and we
1948 understand that. And I really believe that the EVs, I mean I
1949 am looking at how we might do this. Listening to Mr. Duncan,
1950 we need to really expand, kind of, you know, we need to have
1951 more research and development on how we expand types of
1952 vehicles that can be EVs. And I think we need to expand that

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1953 aspect of it and if we give too much preference or to SUVs
1954 and light duty vehicles with lower standards, I think we will
1955 have difficulty actually incentivizing people to buy the EVs.
1956 That is a comment on my part, if you want to respond.

1957 Mr. Bainwol. I just note that there is a challenge when
1958 the market and policy don't align and at some level the
1959 consumer is always right. So we need to, I think, to some
1960 extent when we have compliance issues we have got to educate
1961 the consumer and try to drive adoption, but at the end of the
1962 day we have got to satisfy the consumer.

1963 Ms. Matsui. But I think when you drive adoption, you
1964 know, you really have to give more of a sense of the
1965 inventory has to be greater too, I mean, that is, we are not
1966 there yet.

1967 Mr. Bainwol. Well, the inventory one is coming, but you
1968 can't -- this is the alignment. You can't produce if people
1969 don't want to buy it and we want them to buy it. I mean we
1970 want to produce them and we want to sell them, but if you
1971 produce them and they sit in showrooms that does no one any
1972 good.

1973 Ms. Matsui. But if you make more of the other vehicles
1974 then there would be less incentive to get the EVs.

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1975 Mr. Bainwol. Well, I think the big incentive challenges
1976 is that the success of the internal combustion engine has
1977 gotten stronger and stronger. It is up 30 percent in 12
1978 years. So when you turn in your 12-year-old car and you go
1979 to buy a new car and you are asked to pay a delta for an
1980 electrified product, then you are looking at what you are
1981 getting in terms of the replacement and it is a pretty good -
1982 -

1983 Mr. Shimkus. The gentlelady's time has expired.

1984 Ms. Matsui. Thank you, Mr. Chairman.

1985 Mr. Shimkus. The chair now recognizes the gentleman
1986 from Georgia, Mr. Carter, for 5 minutes.

1987 Mr. Carter. Thank you, Mr. Chairman, and thank all of
1988 you for being here, very interesting subject.

1989 Mr. Bainwol, I will start with you. We were just
1990 talking about California and their initiatives with the zero
1991 emission vehicles and what they are trying to do with that
1992 program. It has got to have an impact on your marketing and
1993 on your manufacturers and exactly what they are trying to put
1994 out there for consumers. What are the challenges that you
1995 see there?

1996 Mr. Bainwol. So California does have a zero emission

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1997 vehicle mandate that is rising to as much as 15 percent by
1998 2025, and a bunch of other states follow that mandate and it
1999 is a challenge. When there is asymmetry between the market
2000 and policy it produces cost and so we are working very hard
2001 to drive down costs and to build range and to make it more
2002 attractive so compliance is facilitated, but it is a
2003 challenge.

2004 Mr. Carter. What about the hybrids? Is that something
2005 that has helped kind of ease the transition, if you will?

2006 Mr. Bainwol. Hybrids help ease the transition certainly
2007 for the CAFÉ and GHG programs, but at this point not for the
2008 ZEV programs.

2009 Mr. Carter. Okay. Mr. Remley, I wanted to ask you,
2010 through the advent of all this all of a sudden now we have a
2011 new anxiety, range anxiety. People are instead of being
2012 concerned about running out of gas they are concerned about
2013 running out of electricity. Now this is a concern
2014 particularly in a rural area like South Georgia that I
2015 represent. We don't, you know, I don't see a whole lot of
2016 charging stations in the areas that I represent. What kind
2017 of challenge is this going to present for your industry and
2018 how do you plan to respond to this?

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2019 Mr. Remley. So, Congressman, thank you for the
2020 question. We are looking for the opportunity to participate
2021 in the EV rollout. What we are looking for is a free
2022 competitive marketplace to do that. As I said, my company
2023 and I know plenty others are looking to install EV charging
2024 at the various different levels, whether it is Level 1, Level
2025 2 or DCFC fast charging. It certainly is that rollout and
2026 the infrastructure needs that are going to be required is a
2027 significant investment that is going to need to be made in
2028 the country over the years.

2029 I would also like to point out that, you know, the
2030 current structure which is both tax incentives and energy
2031 charges through the entire rate base to subsidize a very
2032 small selection of consumers for purchasing these vehicles
2033 seems regressive. And so as I said, from the SIGMA NACS
2034 standpoint we are looking for a level playing field so that
2035 we can deploy free market capital into this exciting new
2036 area.

2037 Mr. Carter. You know, I see this as somewhat
2038 comparable, if you will, to what we are trying to do with
2039 telecommunications. I mean I suspect in the rural areas we
2040 are going to be the last ones to see this type of technology

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2041 and that is going to penalize us in a sense. What is it
2042 going to take? Are we going to be looking at subsidies or
2043 incentives for you to be able to supply those areas with
2044 that?

2045 Mr. Remley. I think that is an important policy
2046 consideration about how rural areas of America will be
2047 allowed to participate in this. As I said, we are looking if
2048 there are subsidies or if there is going to be government
2049 support that that is given to every stakeholder that is
2050 currently involved in fueling the motoring public. We firmly
2051 believe over decades of experience that our industry has the
2052 best corners and the best locations to fuel the motoring
2053 public and we are merely just looking to participate in that
2054 fueling and that change on a level playing field.

2055 Mr. Carter. Okay. Ms. McKernan, let me ask you. You
2056 are consumers. You are the people who belong to your
2057 organization, what are their concerns? Is it price? Is it
2058 range anxiety? I mean what are the people out there mainly
2059 concerned about? Is it just that it is something new that
2060 they aren't familiar with or?

2061 Ms. McKernan. Well, I think actually it is probably a
2062 combination of everything that you just mentioned. Range

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2063 anxiety definitely plays a role, but for some people EVs may
2064 fit into their lifestyle if they don't have as far to drive.
2065 It could be that they have a multiple car household. Most
2066 households do have more than one vehicle. Learning about the
2067 technology, and that is why it is so important for us to
2068 provide the information for consumers and our members is
2069 because we think the more that they learn about the
2070 technology and that they have a wide range of choices when
2071 buying these vehicles that the adoption of this will --

2072 Mr. Carter. I am not trying to be funny, I am serious.
2073 Are you all going to have, you know, electric rescue
2074 vehicles? I mean when somebody runs out of electricity are
2075 you going to send them -- they call AAA and they come and
2076 they can plug into your little vehicle there and recharge and
2077 then take off again?

2078 Ms. McKernan. We actually have piloted a little bit
2079 with some vehicles that go out and can charge electric
2080 vehicles. But yes, I mean AAA will move as the technology
2081 continues to grow so that we can continue to serve our
2082 members.

2083 Mr. Carter. Wow, this is fascinating. Thank all of you
2084 for being here, I appreciate it. Thank you, Mr. Chairman, I

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2085 yield back.

2086 Mr. Shimkus. The gentleman yields back his time. And
2087 again the chair does thank you all for being here. And
2088 seeing that there are no further members wishing to ask
2089 questions for this panel, I would like to thank all of you.
2090 Before we conclude I would like to ask for unanimous consent
2091 to submit the following documents for the record: An op-ed
2092 article by a guy named Mitch Bainwol and a letter from Growth
2093 Energy. Without objection, so ordered.

2094 [The information follows:]

2095

2096 *****COMMITTEE INSERT 11*****

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2097 Mr. Shimkus. In pursuant to committee rules, I remind
2098 members that they have 10 business days to submit additional
2099 questions for the record and I ask that witnesses submit
2100 their response within 10 business days upon receipt of the
2101 questions. And I think I have one I want to send, so please
2102 do that. Without objection, this subcommittee is adjourned.
2103 [Whereupon, at 12:04 p.m., the subcommittee was
2104 adjourned.]